



COAL AGE



Vol. 8

NEW YORK, AUGUST 28, 1915

No. 9

NORTH AMERICAN COAL AND COKE COMPANY

Operating Department
CHICAGO, ILL.

Mr. Henry Porter, Superintendent,
Carbon City Mines.

August 21, 1915.

Dear Sir:

Your letter received, and I note that you are anxious to be transferred to a larger camp because you feel that you are entitled to a broader opportunity than that offered by your present position.

The same mail that brought your letter also brought the letter from your company physician which you forwarded, giving a report on the typhoid epidemic in your camp.

After reading his letter, I must tell you frankly that you seem to have overlooked an excellent opportunity to display your ability as a leader of men. It has been demonstrated time and again that in a camp where ordinary sanitary precautions are taken and where the proper efforts are put forth to exterminate flies, there is little danger of a typhoid epidemic. You know this, and all of your men know it; but the trouble, as I see it, judging entirely by the report that your camp physician has made, is that it has never occurred to you that your first duty toward your company and your men is to see that no measures are overlooked which are in any way vital to the health and happiness of all of those subject to your orders.

It seems paradoxical, but it is nevertheless true, that the simple realization of a certain fact will not move men to action. It takes either a great calamity or a great leader to stir men to action, and it looks as if the great calamity was necessary to your camp, largely because the camp was not fortunate enough to possess a great leader.

Our company is now spending more money than ever in its history to improve living conditions at its mines. We are building better houses and furnishing them with more conveniences, and unless our superintendents are able to inspire their men to get the fullest advantage out of our efforts for them, most of this work will go for naught.

And so instead of promising a better position, it becomes my duty to inform you that unless you can live up to your present opportunities we shall feel it necessary to ask for your resignation.

Yours very truly,

Carleton E. Darrs
General Manager.

Why He Was NOT Promoted

Ideas and Suggestions

"Preparing" for Better Times

BY PENNSYLVANIA ENGINEER

Mr. Boss, how do you size up? In the language of the trapper boy, Are you there? We are on the eve of better times. You have been inspecting the plant, noting what improvements and additions are necessary to meet this change. You have placed a new piston in the hoisting engine, put in a large-size discharge line from the big pump, repaired the headframe—everything looks in tiptop shape now, and you are feeling mighty good and ready to put out more coal than ever before.

But—hold on, you are not through yet! How about yourself? Are you in tiptop shape to meet this business? You don't know as there is anything the matter with you? Well, just give yourself the "once over" and see. You have often found that you have misjudged a man and that he has good qualities of which you never dreamed. Now, there is no danger of you misjudging yourself in this manner. A man's opinion of himself is likely to be very much sugar-coated, so forget for awhile how good you are and sit down and ask yourself a few questions.

Are you still a man of your word? Do the men look up to you and respect you? Have you control of your temper? Have you contracted any bad habits? Are you next to all the new mining wrinkles and new types of machinery?

Now, if you are honest in your examination you will surely find some defect in your makeup—something that you can remedy or improve.

FULFILL ALL PROMISES

If you have got into the habit of making promises to your men and not fulfilling them, you had better cut it out. If you do not have the regard of the men, you had better get it in a hurry. Miners are going to be scarce and the boss who appreciates his men will be the one who will have his plant running full when prosperity hits us.

If you have not read up on new methods and new machinery, you had better "get next" or some other fellow will have your job. Better be sure that your health is good. A sick man is only half a man.

Analyze yourself, find your faults, and you will become a better man.

The fellow that knows himself—knows his strength, knows his weakness—is the fellow who gets there.

The "Big Boss"

BY FORNEY L. PARKER

The claim is made that coal companies are soulless and heartless and that the employees are mere cogs in a big industrial machine, to which less consideration is paid than to the rough iron or steel itself. It is the duty of the man who directs the aims and purpose of the com-

pany in the field—the manager, the superintendent, the "big boss"—to dispel this piece of fiction.

By giving attention to your employees' grievances, showing an interest in their work, in many cases calling them by their first names and by having their welfare and safety at heart, you get them to think and to have confidence in themselves and in the company. It is a tangible incentive to do good work.

I remember an employee—I will call him "Eddie Malone," which is not his name—who was directed by the foreman one morning to perform a certain task. In giving his instructions the foreman unthinkingly called him "Malone," whereas his usual way of addressing him was "Eddie." This set Eddie thinking, which is very good for one provided he is on the right track. In this case, however, the miner thought the boss had started to call him by his surname preparatory to sacking him. In fact Eddie was so busy asking himself why, that he did not have much time for the work at hand.

I merely relate this incident to illustrate the importance of giving your full measure of consideration to the man who works for you, whether he is trapper-boy or your first assistant. If the company has a soul, a high ideal, a definite purpose, you, more than anyone else, are duty bound to convey this spirit to your employees.

This attitude of the "big boss" will be reflected by his lieutenants—men who have charge of important divisions of work and who carry out his directions; and it will do much toward creating a human machine of which all the essential parts will work together in perfect harmony.

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A Plea for a Better House

I am a hoisting engineer. All my life I have lived in company houses, in the summer to roast and in the winter to freeze. While single I did not mind these conditions; in fact, I never thought of them as hardships.

But now I am married and have a family of three. I am proud of them and would like to provide a pleasant and comfortable home. We would like to have flowers around the house and a nice big garden. We would like to have a kitchen and—yes, a bathroom in this house of ours; for we get as dirty as anyone—perhaps a little more, living in a coke town.

Can you tell me where I can find such a place? I have been looking for several years, but so far have not been successful in locating one.

My present house is as good as any in the town where we now live. They are all alike. Most company houses are. Of course, they are just about what our foreign neighbors want, but how about us Americans? Our house contains four rooms—two on the first floor and two on the second. We have to cook and eat in the same room—pretty hot this warm weather. We have tried to raise flowers and vegetables on our little piece of ground, but the houses are set so close together that the sun can

never see our plants. Winter will soon be here again, and then in spite of our big coal stoves our house will again always be cold, like it was last winter. Pretty tough on the kids.

I believe I am a good workman. I make good wages and like my work. If I just had that home now, I would be perfectly satisfied. We pay \$7 a month for our house. How glad I would be to pay \$10 or \$12 for one like I have in mind. It might cost a few hundred dollars more to build, yet I would willingly pay the interest-difference in rent.

We would feel like we had a home then and would be contented. Can you tell me where I can find the opportunity to realize my modest desire?

Facts Worth Considering

By J. J. ROBY

Our laws protect the consumer against extortion on the part of the producer, but they do not protect the producer against the folly of his competitors.

Because of certain hazards not present in other lines of business, the coal operator is entitled to a larger measure of profit than men engaged in most other industries.

The coal operator, unlike the manufacturer, must at once acquire sufficient raw material to operate a long period of years. Furthermore, the mine owner, because of constant depletion of coal and rapid depreciation of plant, cannot keep his property intact.

The method of cost accounting in use at any mine should enable the operator to accurately determine the cost of conducting his business, which should include a reasonable profit, and to continue the operation at a profit until all the coal is mined.

The cost of production, if properly computed, will indicate about the same selling price for coal of similar grades, regardless of ownership, magnitude of operation, probable duration of operation and physical conditions.

When the coal operator sells coal at less than cost, in order to keep his mine running, he simply disposes of a portion of his property without compensation.

When the operator sells coal at a low price, because his mine is new and his primary cost low, he suffers a loss even though he believes he is making a profit.

The operator, to make good, must earn sufficient during the earlier years of his operation to amortize a large part of his investment and reduce his interest charge.

A tract of 10,000,000 tons of coal that cannot be mined at a primary cost and marketed at a selling price to permit an initial royalty of 12c. cannot have an average value of 6c., nor can it all be mined at a fair profit.

The primary cost of operation is represented by actual expenditures made in the ordinary course of operating but should not include interest or payments on borrowed capital.

The secondary cost of operation consists of proper charges against the product for plant depreciation, coal depletion, interest on investment and capital, risk of the industry and a reasonable profit.

The proper selling price is the sum of the primary and secondary costs.

The secondary cost, or margin between selling price and primary cost, of a standard grade of coal of the best quality and with the most favorable physical conditions, determines the basic value for coal of that grade, the value being modified as adverse physical conditions increase primary cost and as poorer quality reduces the selling price.

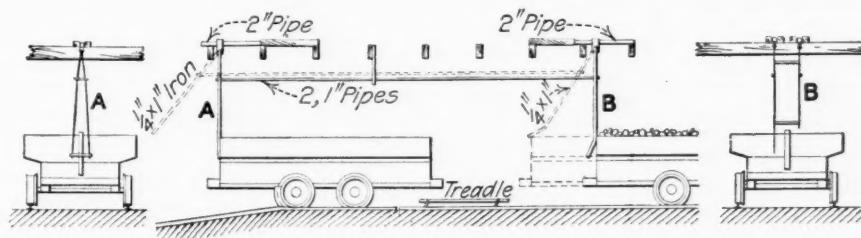
An End-Gate Lifter

By A. W. HESSE*

A simple arrangement in connection with a Phillips crossover dump for automatically lifting the end gate of a mine car while dumping is shown in the accompanying drawing. This arrangement is now in operation on the tippie of the Lincoln Coal Mining Corporation, at Big Creek, W. Va.

The equipment consists of three short 2-in. pipes, two 15-ft. lengths of 1-in. pipe, three pipe straps, separating pipes and bolts, and four pieces of strap iron $\frac{1}{4} \times 1$ in. about 5 ft. long.

The loaded car moving toward the dump strikes the arm B and in raising it moves the arm A away from the stirrup on the end gate of the empty car by means of the two 1-in. pipes connecting A and B. The arm B drags over the top of the loaded car, holding A out of the way until the loaded car bumps the empty off the dump. Then



DETAILS OF APPARATUS FOR LIFTING END GATES ON MINE CARS

before the loaded car reaches the horns of the dump these arms drop back to their vertical positions, and A is ready to catch the stirrup of the loaded car when it is dumped.

These arms extend about 8 or 10 in. below the top of the car. While the sketch does not show it, the arm A is about 5 in. behind the front of the car to assure catching the stirrup of the end gate when the car is ready to dump.

The material in this apparatus is all comparatively light so that only the one rod B is necessary to extend below the top of the car, thus avoiding dragging over the loaded car.

The distance between the arms at the dump at Big Creek is 15 ft., leaving a space of $6\frac{1}{2}$ ft. between the ends of the cars when the arms begin to lift. This distance of course may be varied, depending upon the length of the cars. Care should be taken to avoid placing the arms too close together in order that the loaded car shall not get too close to the dumping point before the front arm is in position to catch the stirrup of the end gate.

The Thicker Coal Seams Will Become Scarcer, and this day is fast approaching. Then will come the turn for the thinner seams. Joseph Dickinson estimates that in half a century many of the thick seams in Europe and America will be completely worked out, and coal will sell at a much higher price. Operators will then find it possible to work the thin beds.

*Big Creek, W. Va.

Allegheny River Mining Company's Cadogan Mine

By FRED NORMAN*

SYNOPSIS—At this mine three coal beds will be simultaneously worked, all the coal being handled in one preparation plant. This plant is so arranged that any combination of prepared sizes from any or all of the coal measures may be loaded on the railroad cars.

The Allegheny River Mining Co., of Kittanning, Penn., is opening a new mine on the west bank of the Allegheny River in North and South Buffalo Townships, Armstrong County, Penn., known as Cadogan mine. This is the sixth large coal-mining operation of that company along the line of the Pittsburgh & Shawmut R.R., between Brookville and Freeport, Penn., and when fully developed will give the company a total output of 15,000 tons per day.

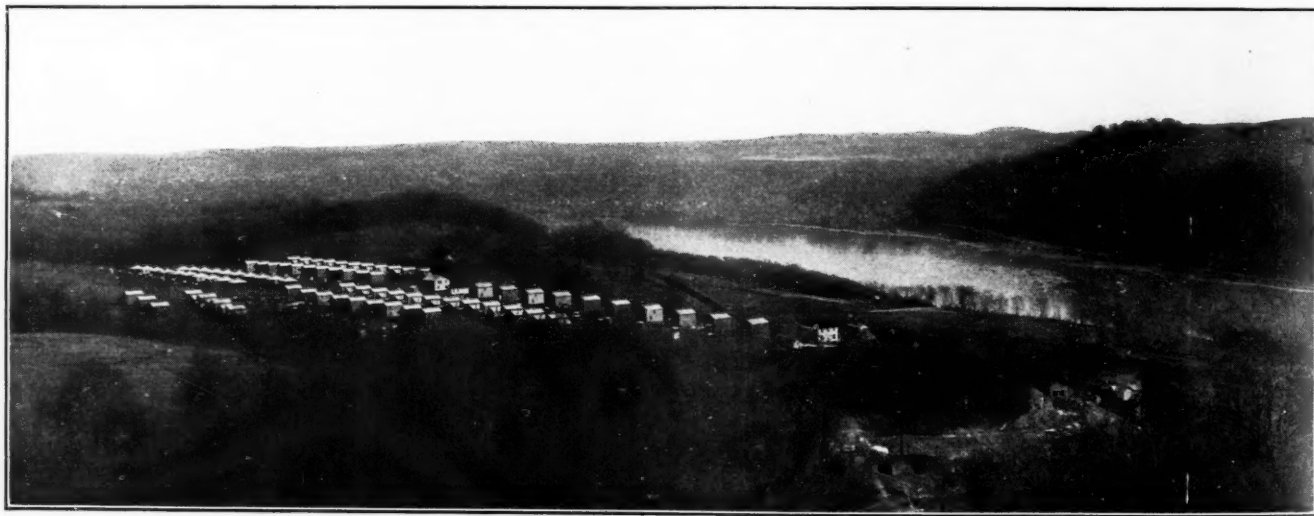
The Cadogan plant is beautifully located on an extensive flat on the Allegheny River, with the tippie yard parallel to the main track of the Pittsburgh & Shawmut R.R. Both the railroad and the mining plant are now in course

miles. The two Freeport veins, however, are not so regular and thin out on the edges in all directions from the body of the seams, thereby somewhat limiting the points of favorable attack to an area parallel with and about a mile back from the river. The territories covered by the Freeport veins are irregular in shape and less in area than the "B" vein, but of such magnitude as to warrant large operations in both measures.

The mine workings are laid out on the "pillar and room" system from double room entries. Main entries are driven four abreast, two haulage in the center and one airway on each side. Face entries are driven off the mains at regular intervals, forming panels of from 30 to 40 rooms off each room entry.

SUPERIMPOSED ENTRIES WILL BE EMPLOYED

The two Freeport seams will be worked with entries directly above one another, while the "B" seam will be worked independently, inasmuch as the interval between it and the "D" seam is about 250 ft., composed of several sandstone and sandshale strata, not likely to cause



THE TOWN, LOOKING EAST, WITH ALLEGHENY RIVER IN BACKGROUND

of construction, and work is being pushed with the expectation of shipping coal in the fall of 1915.

A large coal territory is tributary to this plant, and drifts are opened in three veins, which in this particular section are all of workable thickness. The principal workings will be in the Lower Kittanning, or "B," vein, while extensive operations will be pushed into the Lower Freeport, or "D," and the Upper Freeport, or "E," seams. The thickness of coal in either vein averages 42 in. with a maximum of 60 in. The "B" vein lies about 40 ft. above the normal river stage, with an interval of about 250 ft. between it and the "D," which lies about 45 ft. below the "E" seam.

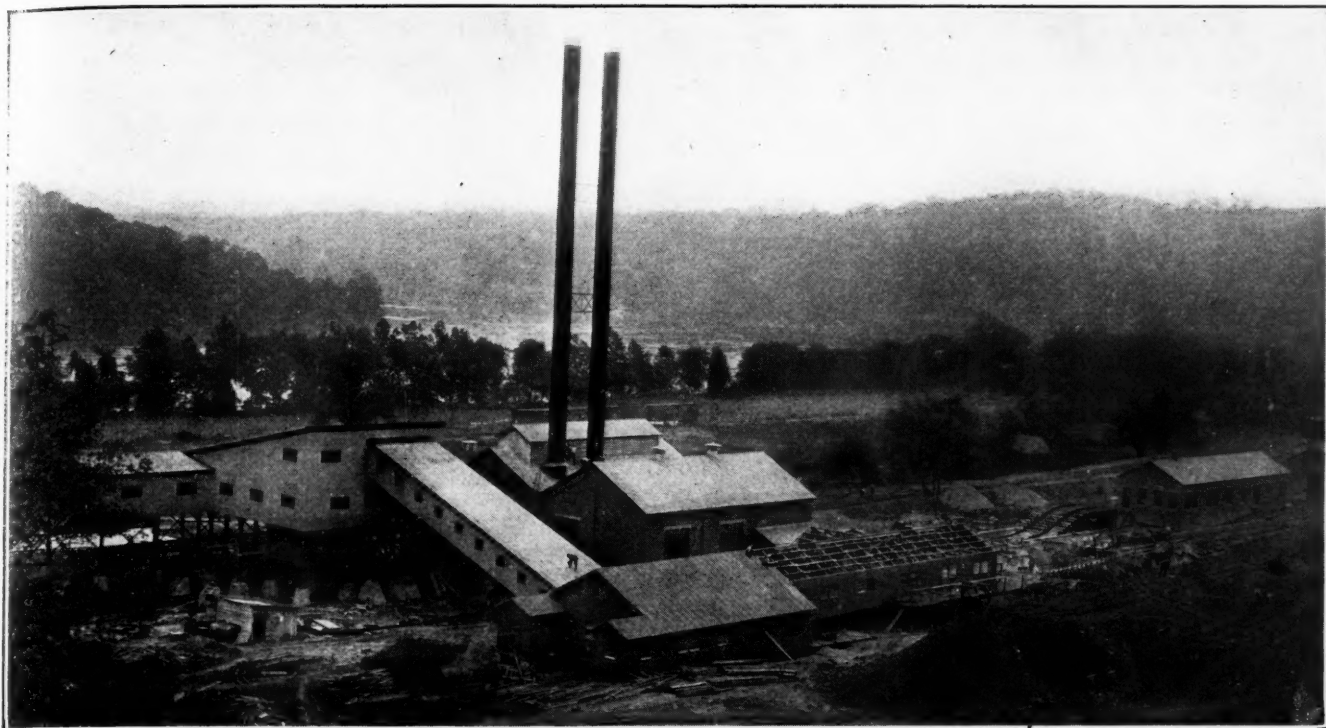
The "B" seam crops full thickness on the river front, and by diamond-drill testing proves to be uniform for

any disturbance in the upper veins from subsidence in the lower. Furthermore, an attempt will be made to keep the upper workings ahead of the lower, since these have a mile handicap at the start. The coal in all three veins is of excellent structure and quality, with favorable roof and floor conditions.

Coal will be mined by Sullivan shortwall electric machines, and hauled by General Electric locomotives. The mine will be ventilated by electrically driven fans and unwatered by electrically driven pumps.

The yard tracks of the railroad are on approximately the same level as the main double-track drift in the "B" vein, necessitating the elevation of the coal to screening height above the railroad cars. To overcome this it was decided to tippie the coal on the level of the ground and elevate it to the screenhouse by apron conveyors.

*Chief Engineer, Allegheny Mining Co., Kittanning, Penn.



GENERAL VIEW OF PLANT, LOOKING EAST

The coal from all three beds will be delivered by locomotives to a low tipple, having two Phillips crossover dumps, two feeder car hauls, two Dempcy-Degener automatic car stops and two Standard platform scales. The locomotives will head trips in on the tipple floor, cut loose and switch over to the locomotive return track, which passes under the tipple floor. This gives the locomotives a clear track to the intersection with the empty tracks, ahead of empty cars. The trip meanwhile travels slowly ahead until engaged by the feeder carhaul, which moves the trip at will so as to place one car at a time on the scale platform. Here it is uncoupled, weighed and pushed off the scales by the next succeeding car, actuated by the carhaul.

The cars after leaving the scales run by gravity to the car stops, which hold them till released by the dumper,

by means of a foot lever. Three to four cars can be held in the stops, which close automatically after each release. Coal is dumped into hoppers holding 10 to 12 cars, the bottoms of which open onto reciprocating electrically driven feeders delivering the coal to the main conveyors.

The empty cars after passing over dumps run by gravity to switchbacks and return by gravity under the tipple floor to electrically driven trip makers, which elevate them about 10 ft. and push the empty trips along tracks with a $\frac{1}{2}$ per cent. grade in favor of the cars.

The coal is fed by reciprocating feeders to two apron conveyors, electrically driven, with capacities of 300 tons per hr. each, elevating it to the top of the screenhouse, where it is delivered to shaking screens of the flanged-lip type, sizing the coal into lump, nut and slack. The



GENERAL VIEW OF PLANT, LOOKING NORTH

lump, lump and nut, or run-of-mine is delivered to picking tables, at right angles to the screens, terminating in adjustable electrically operated loading booms delivering to railroad cars.

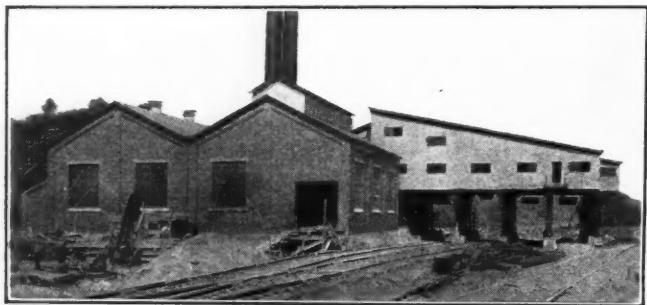
Nut coal is carried from the screens by a transverse flight conveyor delivering directly to the nut car or to another flight conveyor carrying it to the picking tables, as desired. This last conveyor, on its return course below, carries refuse from the picking tables to a crusher or to the refuse bin. This conveyor is partitioned off in the center, one side delivering to either crusher or bin and the other side to the bin only. Dirty coal, bone, etc., goes to the crusher, from which it is taken for fuel to the boilerhouse by a small flight conveyor.

The bin opens with a gate at the bottom into a mine car on a track constructed for the purpose, and all rock, pyrites, slate and other hard or incombustible matter is removed for ballast or deposited on the waste dump.

ANY COMBINATION OF SIZES MAY BE LOADED

Provision is made for loading lump, nut, slack, run-of-mine, lump and nut, and nut and slack, while emergency chutes at the head of conveyors allow loading run-of-mine without passing the coal over the screens. Coal is loaded on four tracks under the screenhouse. Two are equipped with loading booms for lump, lump and nut, or run-of-mine; the other two, for nut, nut and slack, and slack, have no booms. Each loading track will be equipped with Fairmont car retarders, for handling the cars under the screenhouse.

The screenhouse is a steel structure covered by corrugated iron on roof and sides. Machinery is run by 220-volt alternating-current induction motors. The tippie building is of wood with corrugated asbestos-covered iron



SCREEN HOUSE AND POWER HOUSE, LOOKING NORTH

roof and sides. The screenhouse, with all its machinery and apparatus, and all the machinery in the tippie were erected and furnished by the Link Belt Co., while the tippie building was erected by the mining company.

Power will be derived from two 375-kv.-a. General Electric 2300-volt three-phase 60-cycle alternators direct-connected to two horizontal sidecrank nonreleasing corliss-valve steam engines built by the Ball Engine Co. Provision is also made for the later installation of a mixed-pressure turbine to be run by exhaust steam from the engines. The electric units, with the switchboard, etc., together with the 10-ton hand-operated crane, are located in one-half of the powerhouse. The other half contains two Heine safety watertube boilers of 470 hp. each, generating steam at 150 lb. pressure and equipped with six Jones underfeed stokers. Provision is made for the installation of an additional boiler in the same compartment.

Ashes will be dropped through trap doors in the floor into steel cars in the pit beneath. One 1500-hp. Cochran open feedwater heater receives water from a tank outside of the building, and the heated water is delivered to boilers by two American steam plunger feed pumps. The water supply is derived from two 10-in. drilled wells inside the boiler house in the rear of the heater. The water is lifted and delivered to the tank by two American steam-driven deepwell pumps. It gravitates from the tank to the heater.

Engines and boilers, with apparatus and accessories, are located in a brick powerhouse building built on concrete foundations. This building has a steel-trussed red asbestos-shingle covered roof and concrete floors. Two steel stacks 56 in. in diameter and 140 ft. high above the floor rise through the roof. This building was erected by the McClintic-Marshall Construction Co. and lies in an angle formed by the tippie and screenhouse.

Power will be distributed for the present to two substations, one at No. 1 drift in the "B" vein workings and one at No. 3 drift in the "E" vein workings. This latter for a time will serve workings both in "E" and "D."

Three-phase 60-cycle 2300-volt alternating current will be taken from the switchboard to a steel distribution tower outside the powerhouse. This tower will be 25 ft. high and will contain three Pittsburgh 75-kv.-a. 2300/220-volt single-phase transformers for the tippie and screenhouse motors and the general lighting of the plant, and reactors or choke coils and lightning arresters. Three separate circuits will be led from the switchboard to the tower, with provisions for a fourth. The main power circuit consists of three No. 3 bare copper wires to supply the substations, while three No. 6 bare copper wires for ventilating fans will be supplied from a separate circuit from the switchboard. All high-tension lines are carried on wooden poles, with a minimum height from the ground of 25 ft. A No. 6 galvanized-iron static wire is carried on top of the poles, with grounds at every fifth pole. The poles are spaced 100 to 200 ft. apart, according to the contour and conditions of the ground.

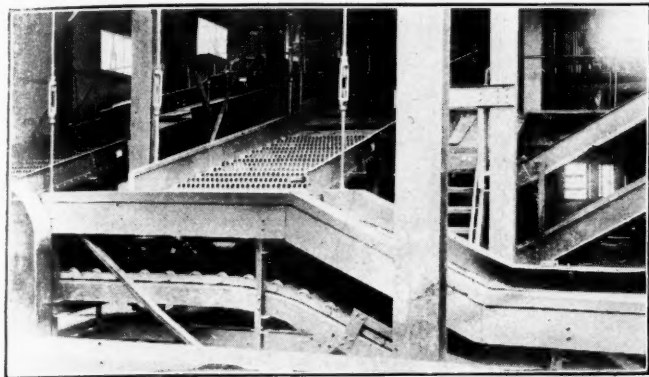
The substations are each equipped with 200-kw. synchronous motor-generator sets, with necessary switchboards, etc., and 2300-volt alternating current will be converted to 275-volt direct current for general power use. No. 1 substation has General Electric equipment, while No. 2 is a Ridgway installation. The substation buildings are brick on concrete foundations, with red asbestos-shingle roofs. Power from the substations is distributed inside and outside over No. 0000 grooved trolley wires.

TWO-SPEED MOTOR IS USED FOR FAN DRIVING

The lower mine will be ventilated by a 7-ft. Robinson fan, driven by a 150-hp. two-speed Crocker-Wheeler induction motor, and housed in a brick building with concrete foundations and roof. The fan is placed at the mouth of the air drift and has a capacity of 150,000 cu. ft. per min. at 3-in. watergauge. No. 3 drift in "E" vein is to be ventilated by an 8-ft. Stine disk fan, driven by a 40-hp. Crocker-Wheeler induction motor, while the "D" vein workings will temporarily be taken care of by a 6-ft. Robinson disk fan driven by a General Electric 25-hp. 250-volt direct-current motor. All fans have Link Belt silent chain drives.

Coal from the upper workings—in the Freeport veins—will be hauled by electric locomotives to the head of a

1200-ft. incline gravity plane, equipped with a Stine figure-8 plane machine. The cars will be handled by disappearing "barneys" to the foot of the plane near No. 1 drift in "B" vein and into the common yard for all coal, from where they will be delivered to the tippie by electric locomotives. Product from the "E" vein will pass over a tramroad with 2 per cent. grade in favor of the loads to the head of the plane, while the "D" vein product will be hauled over a tramroad with $2\frac{1}{2}$ per cent. grade against



VIEW INSIDE SCREEN HOUSE

the loads, in order to reach the yard at the head of the plane.

The arrangement of tracks in the yard and tippie allows the keeping of the coal from the different workings separate, if so desired.

All tracks on main haulage roads are laid with 40-lb. steel rail, 30-lb. in side or room entries and 16-lb. in rooms, the latter being laid on Fairmont steel ties. The gage of the track is 42 in.

Eight-ton electric locomotives will do the hauling at the start; heavier types to be added later if necessary. Wooden mine cars are employed which are built in the company's shops at Furnace Run mine. These are of the single-bumper four-belted type, holding 3000 lb. of coal level full.

Along the yard tracks between the tippie and No. 1 drift are located the necessary mine buildings. The office and supply house, sand and oil house, repair shop and motor barn, in addition to the power house mentioned, are erected near the tippie, while near the mouth of No. 1 drift are the first-aid hospital and the mine foreman's office, in addition to No. 1 substation and fan house. All of these structures are of brick on concrete foundations and with red asbestos-shingle roofs. The mine foreman's office, the repair shop and the motor barn will be erected shortly along the tramroad to the upper or Freeport vein workings.

A mining town of 80 tenements, constructed by the Nicola Building Co., together with a superintendent's residence, hotel, doctor's office, etc., are built, with provisions made for extensions from time to time as needed, on a hill overlooking the river and the works. The town is laid out with streets and alleys, and reservations are made for schools, churches, stores and playgrounds. Water-works supplying the town will be installed, the supply to be derived from drilled wells, with electric pumps and a 50,000-gal. tank high enough to insure good pressure. Four-inch cast-iron mains with 3-in. and 2-in. auxiliaries will distribute the water through the town. Fire plugs and hydrants will be erected at convenient points.

Construction work is still in progress, and although the larger part of the work is completed or nearing completion, much is still to be accomplished. The object is to get the mines in working condition for an output of about 500 tons per day this coming fall and gradually complete construction, along with the mine development, till the rated output of 5000 tons per day is reached.

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Opening South-China Coal Fields

There is a very fair prospect for the development of some of the coal fields of south China, says Consul General George E. Anderson in *Commerce Reports*, especially within Hongkong's trade territory, on a modern basis. At several localities along the West and North Rivers near Canton coal fields have been worked in native fashion for some time and the output has come to amount to a considerable volume.

An American mining expert has had occasion to look into one of these fields in the past few weeks, with a view to development along modern lines, and gives some facts of interest. The property examined is situated on the North River, about 160 miles from Canton, the actual mine being located about a mile from the river and on the right bank. The survey for the Canton-Hankow Ry. lines crosses the property which occupies broken ground, embracing two lines of hills of considerable height. The native workings are located from 800 to 1000 ft. up the side of one of these ranges and the seam has been followed down for about 400 ft. The seam runs about 9 ft. in thickness.

The native method of working is extremely wasteful and also extremely dangerous, even where the seam is as plainly exposed as it is in the case of the one worked. On this property there are three coal beds, one about 9 ft. in thickness, the second about 2 ft. in thickness and the third about 10 ft. in thickness. While owing to the broken nature of the country it is impossible to see whether or not there are faults in the seams, the general indications are that there are none.

The region is essentially coal country; the predominating rock is limestone intermixed with layers of sandstone and slates. Millions of tons of coal are actually in sight. The government analyst in Hongkong reports on the analysis of a sample of this coal that it contains 0.8 per cent. of moisture, 17.6 per cent. of ash, 20.7 per cent. of volatile combustible matter and 60.9 per cent. of fixed carbon. The percentage of sulphur is placed at 1.2 per cent., and the calorific value is 12,830 B.t.u. The ash is grayish white in color. The coke made from this coal is of hard behavior and burns with a fairly long flame.

The matter of transportation has been one of the chief factors in opening such mines. The North River, where these coal seams are found, is too shallow for successful water transportation, and there is no economical means of transport at this time. It is anticipated, however, that the Canton-Hankow Ry. line will be completed to this district in about two years at the present rate of progress. The completion of this line will not only immediately open up this coal field, but it will also make other fields available for the Hongkong coal market and for export.

The immediate need of these fields is modern machinery and capital. The capital needed for the development of the property examined is about \$150,000 gold.

Western Rate Advance on Coal

SYNOPSIS—The recent decision of the Commerce Commission in the Western rate case makes a sweeping readjustment in coal freights. The tonnage affected aggregates more than 13 million. A general advance was granted except to South Dakota. Complete text of that part of the decision covering coal rates is given.

It is proposed by tariffs under suspension to increase the rates on bituminous coal from mines in Indiana, Illinois, Kentucky, Alabama, Missouri, Arkansas, Oklahoma, Kansas, Colorado, New Mexico and Iowa, and from the docks on Lakes Michigan and Superior when shipped to points in Western trunk line and Southwestern tariff committee territories. Some reductions are proposed and the increases are either 5 to 10c. per ton. The increased revenue is 5.36 per cent. of the present revenue on bituminous coal.

SCOPE OF THE DECISION

By taking the reports for one week in May and one week in October, 1914, of the roads hauling 86.5 per cent. of the coal traffic involved, and multiplying the amounts so shown by 26 to obtain estimates for a full year, and by applying the same basis to the roads not reporting, the respondents give fairly accurate figures which show present rates, weighted haul, revenue per net and gross ton-mile, and average load. These show:

	12 Roads in Southwestern and Trans- Missouri Territory	15 Roads in Western Trunk Line Territory
Total mileage operated.....	34,607	49,780
Tons originated (estimated for the year).....	4,628,702	8,951,956
Average weighted haul (miles).....	256	327
Average rate per ton.....	\$1.45	\$1.50
Average revenue per net ton-mile (mills).....	5.66	4.59
Proposed increase for 27 roads is (mills).....	26	
Average revenue per gross ton-mile (mills).....	3.97	3.20
Proposed increase for 27 roads is (mills).....	18	
Proposed average rate per ton.....	\$1.526	\$1.581
Proposed increase per ton.....	0.076	0.081
Average net load per car for 27 roads (tons).....	41.63	

Combining the two groups the percentage of increase is 5.36, the average weighted haul 303 miles, the average present rate per ton \$1.483, and combining 90 per cent. empty haul, the revenue per gross ton-mile is 2.84 mills.

REPRESENTATIVE BITUMINOUS COAL RATES ON WHICH INCREASES ARE PROPOSED.

From	To	Distance, Miles	Present Rate per Ton	Proposed Rate Per Ton	Per Net Ton-Mile, Cents
Peoria, Ill.....	Des Moines.....	250	\$1.70	\$1.80	0.720
Peoria, Ill.....	St. Paul, Minn.....	462	1.50	1.60	.346
Peoria, Ill.....	Huron, S. Dak.....	649	2.55	2.65	.393
Duluth, Minn.....	Woonsocket.....	524	2.55	2.65	.506
Duluth, Minn.....	Aberdeen.....	458	2.55	2.65	.579
Girard, Ill.....	Kansas City.....	305	1.80	1.90	.623
Centralia, Ill.....	Madison, Wis.....	337	1.40	1.45	.430
Milwaukee, Wis.....	Chamb., S. Dak.....	622	3.40	3.50	.563
Springfield, Ill.....	Sioux City, Iowa.....	600	2.69	2.79	.465
Cornell, Kans.....	Kansas City.....	139	.70	.75	.540
Pittsburg, Kans.....	St. Joseph, Mo.....	191	.90	1.00	.524
Pittsburg, Kans.....	South Omaha.....	323	1.35	1.45	.449
Southern Ill. group	Alexandria, La.....	645	3.82	3.92	.608
Southern Ill. group	Pine Bluff, Ark.....	335	2.25	2.35	.701
Southern Ill. group	Brownwood.....	368	2.65	2.75	.747
Alabama mines*.....	Brownwood.....	820	4.80	4.90	.598
New Mex. Dawson	Brownwood.....	831	3.75	3.85	.463
Colorado, Trinidad	Brownwood.....	730	3.75	3.85	.527
Lehigh-Coal, Okla.	Brownwood.....	368	2.65	2.75	.747
McAlester, Okla.....	Brownwood.....	434	2.65	2.75	.634
Calhoun, Okla.....	Dallas, Tex.....	388	1.25	1.35	.348
McAlester, Okla.....	Winfield, La.....	426	2.25	2.35	.552
Hartford Ark.....	Altus, Okla.....	430	2.35	2.45	.570
Hartford, Ark.....	Oklahoma City.....	207	1.45	1.55	.749
Trinidad, Colo.....	Amarillo, Tex.....	256	2.75	2.85	1.113

* Distance from Birmingham, Ala., as given in W. W. Miller Exhibit 4.

Rates have been so adjusted by the carriers that mine operators in the general territory may sell their output in common markets. To do this, rates from the mines located at the greater distances must be accorded rates which yield less per ton-mile than the rates from the nearer mines. In other cases the necessity of maintaining rates at intermediate points no higher than rates to the terminal point makes rates to intermediate points lower than rates to points for similar distances where the rule of the fourth section does not apply. The preceding table shows representative rates, present and proposed, and the revenue per net ton-mile which the proposed rates would yield.

It is estimated by a witness for the respondents that the ratio of empty to loaded mileage is 90. On the St. Louis & San Francisco road from May 1 to Dec. 1 in 1914 this ratio was by actual test 94.79; on the Chicago & Alton the ratio for one year was 82.2; while the average is given as 89.

SOME PECULIARITIES OF COAL TRAFFIC

That trainloads are not hauled in the southwest appears from a table showing the average daily production for December, 1914, of mines on the St. Louis & San Francisco R.R., which may be accepted as representative of the section, as follows:

District	Output (cars)		Total Working Days	No. of Mines	Average No. of Cars per Mine per Day	
	Com- pany	Com- mercial				
Alabama.....	710	3069	3,779	25	31	4.88
Arkansas.....	330	522	852	25	16	2.13
Southeastern Kansas.....	1099	3940	5,039	25	95	2.12
Missouri.....	66	244	310	25	5	2.48
Oklahoma.....	559	531	1,090	25	16	2.73
Total.....	2764	8306	11,070	25	163	2.72

While no such definite information is given as to the Western roads, comparing the mileage operated with the tons originated, as shown in the table first above, it is deducible that there can, on the average, be little trainload movement in this territory.

Coal mines are usually located off the main line of the carriers, thus necessitating a switching movement to and from the mines of an average of over a mile; cars when placed on tracks leading to the mines earn no demurrage; the average tare weight of the car is about 18.5 tons; and the average weight of the load is about 41 tons.

Bituminous coal is not stored at the mines, but is loaded as mined; and because of this and the resulting facts that cars are sometimes ordered and not used, and sometimes loaded and not immediately billed out, and that diversion in transit is necessary in order that coal may be delivered when and as needed, cars in this traffic are kept in use for a longer time, compared with the distance hauled, than is true of the average of other traffic. The cost incident to the assembling and diversion of coal is material, but the exact measure thereof cannot be determined from this record. As pointed out in the general discussion of the carriers' financial situation, there has been a constantly increasing cost of maintenance of these heavy coal cars, a cost augmented by reason of the injury caused by these heavy cars to other lighter equipment.

Between the month of lowest and the month of highest density of this traffic there is a difference of 89.73 per cent.—greater than the difference between the maximum

and minimum tonnage of any other particular kind of traffic. This variation indicates that the movement is seasonal; and the fact that miners' contracts are renewed biennially, causing uncertainty in the production, makes for heavy fluctuations in the volume of traffic; and "although a full car supply cannot be expected all the time, carriers must do more than to provide themselves with sufficient equipment for the slack period of coal production." (Vulcan Coal & Mining Co. vs. I. C. R.R. Co., 33 I. C. C., 52, 71 and cases cited.)

THE CLASSIFICATION OF COAL

That coal loads heavily and that the loss and damage is but nominal offset to some extent the special costs incident to this traffic; coal is of low value, and the value of the particular commodity has always been regarded as a material fact to be considered in determining the rate. On this subject, in Investigation and Suspension Docket 26 to 26C, Rates on Coal, 22 I. C. C., 604, 623, 624, we said:

If a carrier may raise all rates to a basis where each will bear its share of cost, including all costs, and no lower rate is reasonable, then it must follow that all rates are unreasonable which yield to the carrier a greater return than such cost. Under such theory what would be the rate on tea or silks, or high-priced horses, or delicate machines? Is there to be no classification of freight excepting upon the basis of cost of transportation plus insurance risk? If so, the tariffs of every railroad in the United States must suffer a revolutionary change. In all classification consideration must be given to what may be termed public policy, the advantage to the community of having some kinds of freight carried at a less rate than other kinds. And this is the true meaning of the phrase "what the traffic will bear." It expresses the consideration that must be shown by the traffic manager to the need of the people for certain commodities. He accordingly imposes a higher rate upon what may be termed luxuries as compared with that imposed upon those articles for which there is a more universal demand. He also gives consideration to the fact that the rate so imposed enters into the ultimate price to the consumer to but a small degree when the article is one of high value, and that those in the community who can afford to purchase such articles can well afford to pay a rate greater than that which could reasonably be imposed upon the general public for commodities of common use. In this sense what the traffic will bear and the value of the service are analogous. . . . We may not say that a rate shall be fixed so as to meet the requirements or needs of any body of shippers in their efforts to reach a given market, nor may we establish rates upon any articles so low that they will not return out-of-pocket cost. Neither could we fix an entire schedule of rates which would yield an inadequate return upon the fair value of the property used in the service given. There is, however, a zone within which we may properly exercise "the flexible limit of judgment which belongs to the power to fix rates." These are the words of the Chief Justice of the Supreme Court, 206 U. S., 26. There is no flexible limit of judgment if all rates must be upon a level of cost, and out of every dollar paid to the carrier must come a fixed amount of return for capital invested.

To the same effect see Union Tanning Co. vs. S. Ry. Co., 26 I. C. C., 159.

Coal mined in the states here affected has increased in value but little since 1904. The price, except in the states of Alabama and Kentucky, is given for the years 1908 to 1913 in the subjoined table:

AVERAGE SELLING PRICE, ALL COAL FROM MINES IN STATES SHOWN, 1904 TO 1913, INCLUSIVE

(Taken from bulletins, "Production of Coal," by Edward W. Parker, United States Geological Survey)

State	1908	1909	1910	1911	1912	1913
Illinois	\$1.05	\$1.05	\$1.14	\$1.11	\$1.17	\$1.14
Indiana	1.06	1.02	1.13	1.08	1.14	1.11
Missouri	1.64	1.65	1.79	1.72	1.76	1.73
Iowa	1.63	1.65	1.75	1.73	1.80	1.79
Kansas	1.49	1.44	1.61	1.53	1.62	1.67
Oklahoma	2.03	2.00	2.22	2.05	2.14	2.05
Arkansas	1.68	1.48	1.56	1.61	1.71	1.76
Colorado	1.41	1.33	1.42	1.45	1.49	1.52
New Mexico	1.37	1.29	1.39	1.44	1.42	1.46

A shipper gave the prices paid by five railroads for their fuel coal 1910 to 1914 as somewhat higher than the prices shown in the foregoing table; and it appears that one of the carriers is paying the same for coal as in 1910, two slightly more, and two slightly less.

The relative density of all traffic hauled by representative eastern and western roads appears from the following table:

FOR YEAR ENDED JUNE 30, 1914.

Eastern bituminous coal originating roads:	Average Miles Operated	Freight Revenue per Mile of Road	Tons of Freight Carried 1 Mile per Mile of Road
Pennsylvania Co.	1749	\$25.518	4,448,369
Pennsylvania R.R.	4083	31.407	5,430,286
Baltimore & Ohio	4478	16.922	2,997,966
Hocking Valley	351	15.935	3,742,321
Norfolk & Western	2035	18.683	4,497,010
Chesapeake & Ohio	2345	12.305	3,011,617
Buffalo, Rochester & Pittsburgh	581	15.742	3,405,126
Toledo & Ohio Central	446	9.817	2,366,937
Kanawha & Michigan	176	15.031	3,739,955
Bessemer & Lake Erie	204	38.903	8,564,706
Pittsburgh & Lake Erie	223	67.925	9,043,294
Unweighted average		\$21.625	4,100,550

FOR YEAR ENDED JUNE 30, 1914.

Western and Southwestern bituminous coal originating roads:	Average Miles Operated	Freight Revenue per Mile of Road	Tons of Freight Carried 1 Mile per Mile of Road
Atchison, Topeka & Santa Fe	8345	\$7139	706,150
Chicago & Alton	1033	8595	1,417,388
Chicago, Rock Island & Pacific	7729	5478	639,184
Chicago & Eastern Illinois	1283	8825	1,724,429
Chicago, Burlington & Quincy	9139	6871	942,339
Chicago & North Western	8070	6689	771,930
Chicago, Milwaukee & St. Paul	9683	6739	834,338
Chicago Great Western	1496	6645	911,648
Illinois Central	4768	9200	1,633,461
Minneapolis & St. Louis	1646	4338	516,390
Wabash	2514	8032	1,320,933
Cleveland, Cincinnati, Chicago & St. Louis	2187	10,337	1,896,495
Vandalia	910	8326	1,275,451
Chicago, Terre Haute & Southeastern	373	5109	887,354
Missouri Pacific	3919	4972	609,465
St. Louis, Iron Mountain & Southern	3364	7282	926,024
St. Louis & San Francisco	4746	6037	613,127
Missouri, Kansas & Texas	3824	5288	483,838
Kansas City Southern	827	9963	1,284,810
Colorado & Southern	1127	4986	481,034
Midland Valley	380	2745	226,229
Missouri, Oklahoma & Gulf	334	2623	350,095
Unweighted average		\$6789	881,642

* Passenger mileage operated, 1585 miles. † Passenger mileage operated, 207 miles.

That the production of coal in the territory involved has regularly and considerably increased since 1900 is sufficiently illustrated by the subjoined table giving the production for 1900 and 1913:

PRODUCTION OF BITUMINOUS COAL IN STATES COVERED BY WESTERN ADVANCE CASE

(From Coal Statistics, by Edward W. Parker, Coal Statistician, Department of the Interior, United States Geological Survey)

	1900	1913
Arkansas	1,447,945	2,234,107
Oklahoma	1,922,298	4,165,770
Kansas	4,467,870	7,202,210
Missouri	3,540,103	4,318,125
Iowa	5,202,939	7,525,936
Indiana	6,484,086	17,165,671
Illinois	25,767,981	61,818,744

The present rates in the Southwest including rates from New Mexico and Colorado to Texas are generally lower than in 1906 and 1908. Rates on slack coal less than those on lump coal were established in this general territory about 1905, and this has resulted in a material increase in the value of slack coal. To the Missouri River rates have fluctuated since 1904, though except for the fact of the establishment of rates on slack coal they are now somewhat higher than then. The proposed rates from the mines to South Omaha show large increases over former rates. When applied to the weighted average on the shipments of one large shipper they yield only 4.34 mills per net ton-mile.

The rate to the "Twin Cities," which is the designation given St. Paul and Minneapolis, from the southern Illi-

nois group of mines is a base rate, and rates to Wisconsin, Iowa, Minnesota and South Dakota are somewhat influenced thereby. This rate to the twin cities has been competitive with the rates from Duluth and has undergone many changes. In 1887 the rate was \$2 per ton; in 1889, \$1.75; in 1892, \$2; in 1896, a rate of \$1.62½ was established, but one road having made the rate \$1.50, that became the rate for all roads. In 1899 an increase was made to \$1.65; in 1902 there was a reduction to \$1.40; in 1903 an increase to \$1.50, and in 1904 a decrease to \$1.40. The \$1.40 rate remained effective until, in obedience to an order of this commission requiring a rate to the twin cities no higher than to intermediate points, the carriers increased the terminal rate of \$1.50. This increase was sustained by us in *Daly Coal Co. vs. C. & A. R.R. Co.*, 33 I. C. C., 467. In the present case it is proposed to increase this rate to \$1.60. We are of the opinion that the territory affected should properly be considered as one. So considered, while there have been fluctuations, the present rates are no higher than they were 10 years ago.

RATES TO THE SOUTHWEST

It has been shown that for the weighted average for a haul in the Southwest of 256 miles, the present rate is \$1.45 a net ton, and yields a revenue per net-ton-mile of 5.66 mills. In the Western trunk line territory the average haul is 327 miles, the rate \$1.50 per ton, and the revenue per net ton-mile 4.59 mills. In *Okla. & Ark. Coal Traffic Bureau vs. C. R. I. & P. Ry. Co.*, 15 I. C. C., 216, 223, decided June 24, 1908, we gave a table of state commission rates showing for a haul in Texas and Oklahoma of 250 miles a rate of \$1.65 and a revenue of 6.6 mills; for Illinois and Iowa for 300 miles, rates of \$1.20 and \$1.50, and revenues of 4.2 and 5 mills, respectively. Speaking of Southwestern coal rates, we there said:

As affecting the traffic here involved we regard these rates as somewhat too low, especially for the shorter hauls, in view of the grouping policy adopted by the carriers by which many of the mines in a single group, although at some distance apart, are brought into competition upon a parity as to railroad charges in supplying the fuel needs at a single point of destination.

In that case we prescribed rates to specific points higher than the average of rates here proposed. Against an average haul of 256 miles and a rate of \$1.526 a ton on all coal here proposed, we prescribed in this same territory a rate for 228 miles of \$2.25 per ton on lump coal and \$1.65 on slack coal. *Weatherford Chamber of Commerce vs. M., K. & T. Ry. Co.*, 31 I. C. C., 665.

Our attention has been particularly called to the proposed rates on lump coal and coke of \$2.85 and on slack coal of \$2.35 per net ton for 256 miles from Trinidad, Colo., to Amarillo, Tex. This rate is high as compared with the average rates proposed, but the movement is in a territory of sparse traffic. In *Amarillo Gas Co. vs. A., T. & S. F. Ry. Co.*, 13 I. C. C., 240, we prescribed a rate for this haul on coke of \$2.90 per ton, the rate on coal then effective.

For hauls ranging from 58 to 563 miles in a territory where traffic is light we found that rates which applied to the actual movement yielded from different mines a revenue per net ton-mile of 10.06, 8.74, and 8.18 mills, respectively, were not shown to be unreasonable. *Public Utilities Commission of Idaho vs. O. S. L. R.R. Co.*, 33 I. C. C., 103. In 1909 we held that a rate from Chicago to Fort Dodge, Iowa, for 375 miles that yielded slightly less than 5

mills per net ton-mile was "certainly not a high rate." *Fort Dodge Commercial Club vs. I. C. R.R. Co.*, 16 I. C. C., 572, 582.

The comparisons here used may not be altogether persuasive, but they are probative, and tend to establish that the increased rates here proposed are just and reasonable. The maximum increase suggested is 10c. per ton, while the average increase is less than 8c. per ton.

HIGH RATES TO DAKOTA POINTS

Rates to South Dakota yield revenues per ton-mile somewhat higher than those yielded by the average of the rates involved. Specific rates referred to by a witness for protestants show ton-mile earnings ranging from about 3½ to 6 mills. The actual weighted average from the statistics of the Burlington is as follows:

Point of Origin	Distance, Miles	Revenue per Net Ton, Cts.
Illinois	512	4.76
Manitowoc, Wis.	689	4.01
Milwaukee, Wis.	592	4.48

Where deliveries were made on connecting lines the revenue was less than stated in the table above. The coal for South Dakota usually moves in box cars and consequently shows a less empty mileage and a lighter load, the load averaging 28.5 tons.

Rates on coke in Southwestern territory are published in coal tariffs, and coke takes the same rates as coal. It is only in this territory where coke and coal rates are increased generally that coke rates are involved in this proceeding. Coke loads lighter than coal, and there is no transportation reason why rates thereon should be lower than on coal. Slack is fine coal used principally in furnaces, and to some points rates have been accorded on slack lower than on lump coal. Facts showing a justification of increases in the lump coal rates equally justify a corresponding increase in the rates on slack.

PITTSBURGH VS. ILLINOIS COAL IN THE NORTHWEST

From lake ports in Wisconsin and Minnesota to intrastate points in those states no increase is proposed in the rates on dock coal. The like situation exists in intrastate rates from mines in Iowa, Missouri, Kansas, Arkansas, and Oklahoma. It is claimed that injury will result to the coal miners of Illinois unless increases in coal rates are made from the dock commensurate with the proposed increases from the mines in that state. Illinois coal is said to be somewhat less attractive to users than is coal from the Pittsburgh district, but the Illinois coal can be sold more cheaply than the Pittsburgh coal. Details of the cost of each at the representative consuming markets of St. Paul and Minneapolis were shown by protestants in a table here inserted.

The following is a comparison of prices for coal delivered at St. Paul and Minneapolis, the largest coal markets west of Chicago:

FROM PITTSBURG, PENN., DISTRICT

Coal at mines	\$1 25
Average freight charges to Lake Erie ports	.75
Loading to vessel	.05
Lake freight Erie to Superior	.32
Dock charges at Superior and Duluth	.40
Freight from Superior and Duluth to twin cities	.90
Total	\$3 78

ILLINOIS COAL

Average selling price at mines (10 years)	\$1 10
Present average freight charges from state of Illinois	1 93
Total	\$3 03
Margin to cover difference in quality	\$0 70

From other facts of record it appears that past increases in rates from Illinois without corresponding increases in the rates from the docks have resulted in relatively lessening the amount shipped from the Illinois mines. Since the rates from the docks at Milwaukee to points in Wisconsin and rates from Duluth to the twin cities remain unchanged, some carriers maintain existing related interstate rates.

INCREASED RATES TO SOUTH DAKOTA NOT ALLOWED

To South Dakota destinations an increase of 10c. per ton is proposed in the rates on bituminous coal from Lake Michigan and Lake Superior ports, as well as from Illinois mines. No increase is proposed from any of the lake ports to Minnesota destinations. The present rates from the lake ports to South Dakota destinations are on a higher per ton-mile basis than rates to intermediate destinations in western Minnesota. An increase in the rates to South Dakota destinations unaccompanied by a like increase in the rates to Minnesota destinations would accentuate the existing violation of the general principle that the ton-mile revenue should decrease with increased distance. The present rates to South Dakota destinations appear to be on a higher basis than to other Western destinations, although the greater part of the haul is through the lower-rated territory. For these reasons the increases proposed to South Dakota destinations have not been justified.

From the facts of record we are of opinion and find that, with the exception of rates on coal to points in South Dakota, the proposed increased rates on coal have been justified, and the orders of suspension relating thereto will be vacated.

Des Moines, Ia.—Iowa coal operators feel that the increased rates on bituminous coal, granted the railroads by the Interstate Commerce Commission, will be of benefit to them inasmuch as short hauls will give them an advantage over outside companies. Considerable business in northern Iowa especially has gone to outside companies. More than 22 per cent. of the total railway tonnage in Iowa is bituminous coal.

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"Extracts from a Superintendent's Diary"

It is hard to realize the almost universal appeal that music possesses unless some unusual event draws our attention to it.

We have experienced such an unusual event in our camp during the past week, and in future I intend to make good use of the experience gained.

One of my wife's cousins, a young lady with a magnificent singing voice, spent the week with us; and because she delights to sing whenever she feels that her singing is appreciated, we had opportunity to hear almost her entire repertoire.

Twice during the week, at night, almost the entire population of the camp gathered around our house, attracted by her singing, and on the last night of her visit she went out on the veranda of the house and sang a number of songs for the sole pleasure of those who were on the outside. It was there that I was reminded of the all-prevailing power and charm of music.

From my position on the veranda, back in the shadows,

I could see plainly all that was going on and no one could see me. The possibilities of such an opportunity to watch unobserved the emotions of men is quite uncanny, and my experience was entirely in keeping with the possibilities.

The song that made the deepest impression was, "Home, Sweet Home." Mining-town homes are not average homes, at least not in our country. They are at best only temporary homes, and there can be few ties binding their occupants to them. Children and grandchildren do not return to them because of any sentiment that is supposed to attach to the place of one's birth. It would even be difficult to find a mining-town home that had been occupied for a long-enough period continuously by any one family to be called the birthplace of all of the children of that family.

One may be pardoned for wondering then why "Home, Sweet Home" should make such an impression on our men.

But there was no mistaking the appeal. During the singing of the song, the interest was so intense that a deaf stranger passing, seeing their faces, without being conscious of the music, might easily have been led to believe that the entire crowd was under some strange hypnotic spell. And in reality he would not have been so very far from the truth.

After the song had died away, almost every one in the audience, as if by common impulse, came up to tell the singer how much the singing had been enjoyed, and in the manner of the telling was evidence of the deep emotion that had been aroused.

While they were still under the spell, someone in the audience suggested that Tim McDougal give a song and allow the lady to rest. Tim responded instantly, and his song was well received, much to the surprise of everyone present, because Tim was not much of an artist at best, and singers are supposed to suffer by comparison.

But Tim's success was not the only surprise of the evening. Old grudges seemed to be forgotten, neighborhood quarrels seemed to have lost their meaning, and distinctions of birth and salary meant nothing at all to the crowd while under the spell of music.

Everyone seemed to be so thoroughly happy that there was no place for any unpleasant thoughts, and when the music came to an end everyone in the audience went off smiling.

I am going to arrange matters in the future so that the musical talent in our village will have an opportunity to express itself and demonstrate its value to our community.

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Watch Wires Used in Blasting

The increasing use of electric blasting and of larger charges emphasizes the importance of watching the condition of all leading and connecting wires and blasting machines to see that they are kept in good condition and that connections are well made.

Avoid kinking wires, as this leads to cracks and breaks not easily detected through the insulation. Don't drag wires over the ground, as this scrapes off the covering. Test the blasting machine with the rheostat at regular intervals to see that it is working up to capacity. Test all circuits with the galvanometer before attempting to blast and thus make sure that the insulation is perfect.

Coal Industry of Natal

One of the leading industries of Natal is that of coal mining, says *Commerce Reports*, and as in all other enterprises this showed a slight decrease in the output for 1914 over the preceding year. The decrease was not due altogether to the war, although that was the greater reason. Labor trouble in the early part of the year 1914 caused an almost entire cessation of railway traffic for about a month and interfered with the running of the mines.

There are 21 coal-mining companies in this district, with a total output last year of 2,316,665 tons, a decrease from the year 1913 of 281,743 tons, as the output for that year was 2,608,408 tons. This output for 1913 was the largest ever experienced, while the yield of 1914 shows a drop from the preceding two years. The output of the local mines in 1910 was 2,296,687 tons; for 1911 it was 2,394,338 tons, and for 1912 it was 2,472,085 tons.

A considerable quantity of this coal is used in the district, but the greater portion is sold for export and for bunker coal, the latter being the largest industry. The bunker coal taken on vessels for fuel last year amounted to 948,000 tons, a falling off of 66,000 tons from the year before, which amounted to 1,014,000 tons, a comparatively small decrease. But in coal exported the falling off was much greater, 42 per cent., as the coal exported last year was only 355,000 tons, while for the year 1913 it was 615,000 tons.

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Coal Deposits in Sweden

Dr. Edward Erdmann, state geologist of Sweden, has made investigations regarding the coal area in the province of Scania, says Consul Emil Sauer in *Commerce Reports*, and according to his report the coal deposits there are calculated to amount to 106,500,000 tons.

The rate of mining the last few years has been only about 300,000 tons per annum. The annual consumption of coal in Sweden amounts to over 4,000,000 tons, and the domestic production supplies only about 7 per cent. of this, while the balance, or 93 per cent., must be imported from abroad.

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Keeping Conveyor Belt Records

A new method of recording the cost of various conveyor belts in operation has been worked out by the B. F. Goodrich Co., of Akron, Ohio, in the interest of all belt users.

Ordinarily, accurate costs are rather difficult to determine, and many people have not the time to work out an adequate system for making computations. The use of various belts, however, is an important factor, and many a dollar can be saved when it is known where to cut down the tonnage cost.

The card record in question, which is mailed free on application by the Goodrich company, is simple, but most efficient. It will help to stop the small leaks where profit continually slips out.

Forty-six years of experience naturally gives this concern a wealth of material from which to formulate ideas. The development of these ideas, however, is not a secret, and their arrangement on the record card is purely a service to the belt user which cannot help but be beneficial.

Specifications for the Egyptian Railway Contract

The specifications for the Egyptian State Railways and Telegraphs contract are an interesting example of foreign practice. The contract involves 360,000 metrical tons (354,310 gross tons) of either Welsh or American screened steam coal. Bidders must use form attached to the official "specification." It is provided that Welsh coal must be furnished from certain specified collieries only, and American coal must be suitable for locomotives, to contain about 35 per cent. and not over 40 per cent. volatile and about 6 per cent. ash, both on the dry basis. Analysis must be submitted with the proposal, the collieries and seams named and certificates furnished. Each cargo is to be judged by a sample taken at the loading port by the administration's inspector. For more than 2 per cent. ash in excess of the percentage established in the contract 4c. will be deducted for each 1 per cent. or fraction thereof. Prices are to be quoted in British currency per metrical ton (equivalent to 2204.6 lb. avoirdupois). Bidders may quote by telegrams, provided the tender has been sent by mail, the space for prices being left blank. Two per cent. of the total value must be deposited as "earnest money," this to be increased to 10 per cent. if the tender is accepted.

On Welsh coal, prices are to be f.o.b. administration steamer at loading port, and on American coal delivered free at railway quay, Gabbary, Alexandria, custom dues only are excluded. The steamer is to pay 6c. per gross ton for stevedoring at Alexandria, besides providing steam, etc., in accordance with Welsh Coal Charter Party.

Deliveries are to be made from Sept. 1, 1915, to Apr. 30, 1916 in the case of Welsh coal f.o.b., and from Oct. 1, 1915 to May 31, 1916, delivered in the case of American coal, about in monthly proportions, but the administration has the option of increasing any monthly quota up to 30 per cent. or dividing the contract according to a prescribed table, the unit of shipment being 5000 tons, or one shipload. There is also a rigid strike clause and a provision that the buyer may purchase for the account of the contractor in case of delays.

On American coal none is to be shipped except in holds with at least 12x12-ft. hatchways and not between decks. Steamers must not be over 415 ft. long and loaded draft not over 25 ft. on arrival at Alexandria. Guaranteed rate of discharge is to be 700 tons per working day. Contractors are to make all necessary arrangements for payment of freight. Settlements are to be made by check on London in full on discharge.

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Coal Storage at Sewall's Point

The accompanying photographs show the huge coal yards at Sewall Point, near Norfolk, Va., where a mountain of coal estimated to contain nearly a million dollars' worth of fuel is piled for shipment. This stored coal sometimes becomes overheated and catches fire from spontaneous combustion, so that great care must be exercised to prevent these losses by fire. A body of guards are constantly on duty ready to check in the incipient stage any flames that may start. The coal piles shown are maintained by the Virginian R.R.



STORED COAL AT SEWALL POINT, VA. GREAT CARE IS NECESSARY TO PREVENT FIRES



SOME OF THE MEN EMPLOYED TO FIGHT FIRES AT THE SEWALL POINT YARDS

The Labor Situation

SYNOPSIS—The miners in eastern Ohio believe that when the mines are idle the officials should receive strike benefits, but no wages. Ohio miners contend that they are victims solely of the high railroad rates, but the operators claim that both wages and freight rates are to be blamed. In Colorado J. R. Lawson obtains a supersedeas. In Illinois a union water supply is barred from a non-union washer, and violence is attempted against a cooperative mine.

On Aug. 11 the miners of subdistrict No. 5 of the United Mine Workers of America in Ohio met in convention. This subdistrict, it will be remembered, covers eastern Ohio. The report of Secretary-Treasurer William Applegarth was read to the convention. It showed that four local unions had been abandoned, three had been organized and seven exonerated from paying tax. On Feb. 28, 1915, the date up to which the report extends, only \$500.60 was in the treasury.

C. J. Albasin, the president, had received during the year \$843 as salary. His expenses had been \$687.38. The salary of Vice-President William Roy had been \$1074.75 and his expenses \$685.31. William Applegarth received \$1128.20 as salary and \$257.42 for expenses. These payments seem quite reasonable awards to the men who have put up the long tough losing fight for the miners in eastern Ohio, but of course compared with what the miners have been receiving meanwhile it is a plethora of wealth, and the statement of the moneys they received aroused much feeling.

Union Leaders to Receive Only Strike Benefits

The miners passed a resolution prescribing that the salaries of the officers shall cease when the whole of the subdistrict is on strike and that they shall then receive their expenses and strike benefits in the same manner and in the same amounts as the miners thus suffering from idleness. The miners can by no means discover a more certain way of assuring themselves of defeat. As soon as a strike occurs the leaders will be prone to seek a settlement, for it would cost them nothing if the miners failed to win. All kinds of discontent will arise between the leaders and the men. Among other matters it was noted in the report that the union paid out \$38,000 for shoes.

Extremely creditable was the disinclination of the union to let Homer Wilson take office. He had been serving as a bartender, and the constitution forbids any member to handle intoxicants. Wilson probably needed the money to support his family, and so was less subject to censure, and eventually was allowed to take a seat in the convention. The U. M. W. of A. does well to take a strong stand on the temperance question.

No Benefits for Idlers and a 5 per Cent. Tax

Some of the members who were working had been receiving benefits and some of the beneficiaries have failed to take work when it is offered. It was decided that such men should be suspended until they paid back all benefits thus improperly paid. The working members of the union in eastern Ohio will be required to pay 5 per cent. of their earnings toward the support of those out of work. There are 4000 of these idle men. Resolutions were passed against cooperative mining. Men so engaged were classed as mine operators. They are to be fined \$100 and suspended for six months.

The miners at the Blaine mine of the Lorain Coal & Dock Co., one of the largest mines in eastern Ohio, located near Bridgeport, have gone on strike for the third time in two weeks. The men resent the fact that scales have not been installed to weigh run-of-mine coal as agreed, and they can hardly be blamed for their frequent and determined protests. They are clearly entitled to the scales and the run-of-mine method of weighing.

Only the Sunday Creek Co. Has Entirely Closed Down

In the Hocking Valley field conditions are not nearly so bad as have been represented. It is true that the Sunday Creek Co. has closed down its mines completely, and it is by far the leading company in that region. But according to a report submitted to the freight department of the Hocking Valley Ry. on Aug. 11, 40 of the 68 mines served by the road were then

in operation. These were running either steadily or part time, and together averaged a total of 200 cars of coal a day. That is only five cars per mine—at most 250 tons, and probably much less. However, as the mines are small the tonnage shows considerable activity.

The brunt of the case against the Hocking Valley Ry. is being borne by the Sunday Creek Co., and it is felt that the idleness is only in part due to a lack of orders for coal. The Sunday Creek Co. is suspected by some persons of trying to fortify its argument by closing its mines. The New Pittsburgh Coal Co. has three of its five mines working; the Manhattan Coal Co. five out of eight; while the York Clay & Mining Co. has two mines and is working only one.

The North Hocking Coal Co. and the Standard Hocking Coal Co. have two mines each and all are working. The Hocking Block Coal Co. has three mines, all in operation. Out of 37 mines individually owned or cooperatively mined, 24 are running and 13 are closed. The Sunday Creek Co., with nine mines, is the only concern of any importance not operating at all.

Col. E. S. Bryant has promised to look into these figures. He could see no reason why a single company should be the only one unable to operate even part time. Especially does the idleness appear unnecessary when it is recalled that most of the mines in the Pomeroy district and in eastern Ohio are also operating.

Some of the Men Show Little Inclination to Work

In face of the continued refusal of the general public to get excited about the miners' situation, the adjutant-general's department is considering another method for relieving conditions. They have come to the conclusion that the man who refuses work to support his family should be prosecuted and sent to the stone pile.

A case at Corning, Perry County, gave rise to this trend of thought. Work in a brickyard, where some shale had to be blasted out, was offered to a miner who was in the habit of handling explosives. After he had been at work for several hours a representative of the union came along and inquired what the job paid. He was told \$2 a day. He refused to allow the man to continue at work for that pay.

It is the opinion of state officials that such a man, unless he has other means of keeping his family, can be prosecuted for nonsupport. He will be cut off from receiving state aid.

Interstate Commerce Commission Will Do Nothing

Several Ohio operators and their attorneys recently conferred with the Interstate Commerce Commission at Washington, D. C., and pressed for a complete readjustment of coal rates in the Middle West. A number of railroads engaged in carrying coal were represented at the conference and operators in other states were also present.

The commission was loath to open the question which might involve a readjustment of rates throughout the country. It refused to arrange for a further conference on the matter. J. H. Winder and E. C. Morton, general manager and attorney, respectively, for the Sunday Creek Co., and W. K. Field, president of the Pittsburgh Coal Co., which holds the stock of the New Pittsburgh Coal Co., were among those attending the conference.

But despite the attempts to induce the Interstate Commerce Commission to grant lowered freight rates, the Sunday Creek Co. is pressing for relief from the Ohio Utilities Commission and has obtained subpoena duces tecum for all the records of the Hocking Valley Ry. bearing on the cost of transporting coal and assembling coal trains. Accordingly, on Aug. 17, when the Utilities Commission reconvened, the Hocking Valley Ry. presented several drayloads of undigested records. They could have supplied the summaries as worked out in detail by the auditing department of the railway company, but failed to do so.

It would require a whole year for experts to wade through the testimony furnished. The Ohio Utilities Commission appointed the men originally employed by the Sunday Creek Co. and Beman Thomas, a local accountant, as examiners. The railroad objected to its own accountants being used, saying they were biased, but the commission persisted in its course and an injunction was threatened by the attorneys for the railway company to prevent the experts from examining the books. It was claimed that application for the injunction would be made in the Ohio Supreme Court, but up to Aug. 21 no such action had been taken.

The Sunday Creek Co. filed an amended intervening petition asking that the investigation be extended to both the Toledo & Ohio Central and the Zanesville & Western Ry. The peti-

tion in the case of these roads is the same as originally filed by the U. M. W. of A. officials against the Hocking Valley.

John H. Winder, general manager of the Sunday Creek Co., announced that eastern Ohio operators have promised to enter the case soon. Thus all the coal freight rates in Ohio will be subjected to inquiry. On the other hand, the railroad companies will probably identify themselves with the cause of the Hocking Valley, and a battle-royal is promised.

After the appointment of the special examiners to go over the records of the railroad company the hearing was adjourned until Oct. 5. At that time it is hoped that the data desired by the attorneys for the coal company and the miners will be secured. These data relate to the costs of assembling trains, of transportation proper and of maintaining switching and terminal facilities.

The operators are determined, however, that the question of freight rates shall not be allowed to hide the important difference in wage scales existing between Ohio and West Virginia, which they feel is crowding the Ohio market to the wall. It is not the difference in the cost at the market which alone pinches; the cost at the mine is also in controversy.

The Difference in Wage Scales in Neighbor States

Walter R. Woodford, of the Rail & River Coal Co., with mines at Bellaire, has given out a statement saying that the price at the mine of West Virginia mine-run coal is 70c. per ton or even less. Mine-run in Ohio costs the operators 95c. per ton under normal conditions. He gives the following comparative scale after increasing the day rates in the Ohio region one-eighth so as to put the 8-hr. day rates on an even basis with the 9-hr. day scale of West Virginia:

	No. 8 Seam, Ohio	Kanawha, West Virginia
Pick mining.....	\$0.678	\$0.49
Machine loading.....	.39	.26
Machine cutting.....	.08	.065
Water haulers.....	3.195	2.05
Motor and machine runners.....	3.195	2.55
Tracklayers.....	3.195	2.43
Trackhelpers.....	2.93	2.00
Trappers.....	1.39	.89
All other inside day labor.....	2.93	2.00

These figures and others like them are making much stir in West Virginia, and statements are made to show that gross freight rates are higher from the West Virginia field than from Ohio, and that the West Virginia coal wins on its superlative merits. Moreover, it is said Ohio is a farming state and doesn't need any mines to secure its prosperity. West Virginia without mines would be a wilderness, whereas Ohio would be little the worse.

The mines in Ohio are said to be poorly equipped compared with those in West Virginia and are sinking gradually to a decline. This is doubtless true; but the inefficiency is not the cause of the misfortunes of the field, but rather the effect of higher wage scales as well as thinner, poorer coal and unfair freight rates.

Mr. Woodford questions the right of the state to ship men from the Hocking Valley to Cleveland to work on the streets and in other places at \$1.75 per day when they refuse or are not permitted to work for an operator in Ohio at less than \$2.62 or \$2.84 per day.

Colorado Supreme Court Fails to Support Judge Hillyer

The Colorado Supreme Court has granted a writ of prohibition preventing Judge Granby Hillyer, of the Third Judicial district, from hearing the case against three men charged with murder in the Colorado coal strike. At the same time a writ of supersedeas was granted upon the application of John R. Lawson, international board member of the United Mine Workers in America, who had been assigned by the union to work in Colorado. He had been tried before a jury and found guilty of murder, being sentenced to life imprisonment. Justice S. Harrison White wrote the writ of prohibition, Justices Hill, Teller, Scott and Bailey concurring. Chief Justice Gabbert and Justice Garrigues dissented, but presented no written opinion.

The effect of the writ may be to prevent Judge Hillyer from trying any further cases. Two of the men he is not permitted to try are John Burke and Charles Haines, accused of killing Maj. P. P. Lester, of the National Guard during the battle of Walsenburg on Apr. 29, 1914. The third case is that of K. Uyada, a former striker accused of murder.

Hillyer for a Short Time a Company Attorney

Judge Hillyer before being placed on the bench by Governor Carlson appeared and argued in four strike cases, acting on behalf of the operators. The court felt that this might bias him in his judgments and may have prejudiced him in the trial of Lawson, even though he may have been honest in his determination to give the accused a perfectly fair trial. But it must be added that the employment of Judge Hillyer

as an attorney for the coal companies was extremely brief. At one time the U. M. W. of A., through Horace N. Hawkins, desired to retain him, but he had given his word to Judge Northcutt that he would not accept a retainer from anyone else, though no names were mentioned as to the parties for whom Northcutt was retaining Hillyer.

Editorial reference will be made next week to the injunction proceedings in West Virginia and the anthracite region of Pennsylvania. These were brought to secure the freedom of speech and action on the part of members of the union who find that they are at variance with their paid leaders and representatives. In Pennsylvania, Thomas Butler ventured to take a stand on the mine-foreman certificate law different from that labeled orthodox. An attempt was made to dispossess him, and this the court has temporarily frustrated.

A New District No. 30 Erected by Disgruntled Union Men

Three locals out of four at Boomer, W. Va., have left the old district organization and formed a new district, which they have named District No. 30. They demand of the Boomer Coal Co. that the check-off be paid to them, and they have obtained an injunction restraining the company from paying the money to the officials of the old district.

The old union District No. 17 having so fiercely opposed all injunctions is ill-disposed by such judicial means to prevent the Boomer Coal Co. from paying the \$500 in question to the unrecognized District No. 30. It has been their cry that the injunction is an unmitigated evil, and it would be a humiliating confession to make use of this instrument. It is said the Boomer Coal Co. is disposed to pay the money over to District No. 30, but it is hard to see how such an action can be justified, as its contract was made with District No. 17.

Strikes in West Virginia, Kentucky and Illinois

At Hartford, Mason County, W. Va., in the Pomeroy Bend district, 40 miners went on strike at the mine of the Jackson Coal & Mining Co. A miner desired to be changed from entry to room work, and on his being refused, his fellow-workmen quit for two days. Of course, the strike was a violation of the miners' contract. To begin with, the miners had no grievance and, secondly, if they had, the question by their agreement must be settled without a strike and in the manner provided.

At Harlan, Ky., 115 miners of the Catrons Creek Coal Co. were recently on strike for three weeks. They have returned to work without having gained the recognition of the union which they desired or the reinstatement of two men, the discharge of whom occasioned the walkout.

The Mt. Olive & Stanton Coal Co. has had a controversy with the United Mine Workers of America relative to the operation of the new \$50,000 washer of the company. Non-union men were employed on the work at the washer, but the water needed for its operation has been pumped from a nearby mine where union miners and a union engineer are employed. These men demanded that union men be engaged to operate the washer. If the plant was to be operated as a nonunion proposition, the men demanded that the union engineer should not be required to pump water for the jigs. By installing a pump at the washer the difficulty was successfully overcome.

The "Loss-Sharing" System in Coal Mining

In the issue of "Coal Age" of July 10, pp. 52 and 53, mention was made of the strong feeling of opposition among Illinois union men to the cooperative movement which may be better called the "loss-sharing" rather than the "profit-sharing" system. On Aug. 17, 12 men were charged with complicity in a plot to destroy the mine and buildings of the Granger Coal Co. at Winkle, Perry County, Ill. This mine is worked on a cooperative basis.

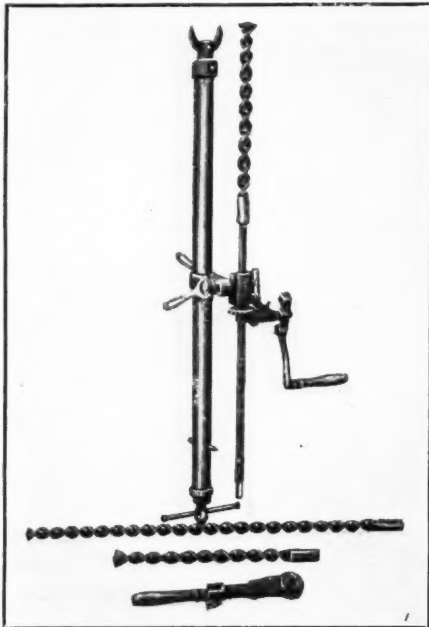
The preliminary hearing took place before Justice Fallon at Duquoin of that county. Two were held for the grand jury and the other ten were discharged. The two men held are David Richards, white, and William Hawkins, colored. They will be tried at the November term of the Perry County Circuit Court. Hawkins gave the authorities the information which resulted in the arrests. He said he was offered \$200 to aid in blowing up the mine. Richards had dynamite caps in his pockets when arrested.

In the South Wales District and in Monmouth County, the county which adjoins South Wales but is in England, 60,345,295 short tons were produced in 1914. The whole tonnage of Great Britain was 297,520,193 short tons. So the South Wales field produced, roughly, 20.28 per cent. of the whole production of the United Kingdom. In 1913, 233,091 men worked at the mines of that district, of whom 35,003 were surface workers. Of course these figures have been seriously depleted recently by the recruiting sergeant's activities.

New Apparatus and Equipment

New Hand-Operated Post Drill

The Howells Mining Drill Co., of Plymouth, Penn., has recently placed upon the market a new post drill known as the "Spry Type C" machine. This drill is hand-operated and is designed for drilling coal and the



THE POST DRILL SET UP TO DRILL VERTICALLY

medium hard rocks usually found in coal, fire clay and other mines.

The machine proper is mounted on a post light but sufficiently strong for the purpose. This post may be extended two-thirds of its normal length. Thus a 6-ft. post can be extended to 10 ft. in length. The boring head is carried on a yoke which encircles the post and may be readily clamped to it or moved from one position to another. The boring head also swivels on the yoke so that the auger or bit may be turned at any angle.

It may be thus seen that since the yoke may be turned completely around the post and the head swivels on the yoke throughout an entire revolution, the auger may be placed at any angle in either a horizontal or vertical plane or both and may be thus pointed in any direction whatsoever.

The vertical adjustment of the yoke on the post permits of holes being drilled within 5 in. of either roof or floor of a mine. The post will work with equal facility either end up. Augers are usually furnished varying in length by 2 ft., the ordinary set consisting of lengths of 2, 4 and 6 ft.

The ratio of the bevel gears transmitting motion to the drill is 1 to 2. Thus the auger makes one revolution to each two revolutions of the crank. The feed screw or bar which advances the drill may be furnished with 8, 10, 12 or 14 threads per inch so that if the operator turns the crank at the rate of 60 r.p.m. the advance

of the auger would be $2\frac{1}{4}$ in. with a 14-thread bar or $3\frac{3}{4}$ in. with an 8-thread bar. For the 10- and 12-thread bars the advance would of course be 3 in. and $2\frac{1}{2}$ in. respectively.

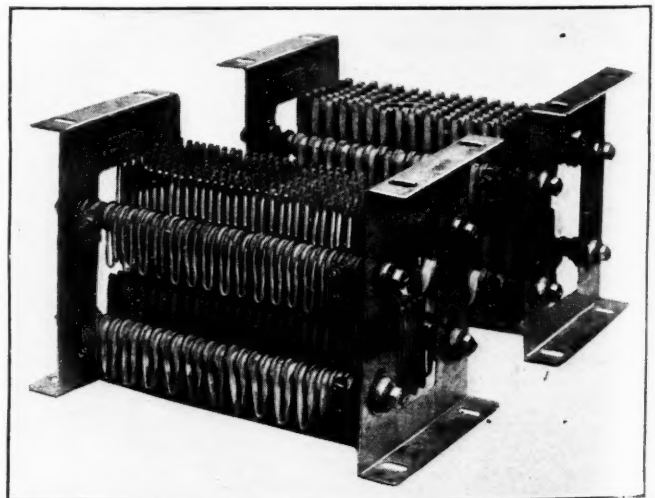
The illustration shows the drill equipped with a three-hole crank handle. An extension crank giving a variable sweep or a single- or double-acting ratchet handle may be employed. The sleeve within which the feed screw revolves is made in two pieces and may consequently be readily removed and replaced by a new one when the threads become badly worn.

This entire machine, including post, yoke, crank, set of three drills, etc., weighs only about 65 lb. It may therefore be readily transported by one man. Although it was designed primarily for drilling coal preparatory to shooting down it may also be used to advantage in many mines for taking down top or lifting bottom. It is particularly advantageous where the top rock will permit of its use in drilling peg holes for suspending trolley wire. It may be set up in about one minute and with a 10-thread feed bar would put in a 6-in. hole in 2 min. if the crank were turned at 60 r.p.m.

This drill is now in successful operation in coal mines, both anthracite and bituminous, as well as in tale, gypsum and fireclay operations.

New Type of Grid Resistance

A new type of grid resistance for use in connection with direct-current motors is being placed upon the American market by the Elleon Co., of 50 Church St.,



RESISTANCE FOR TWO 23-HP. 250-VOLT MINE LOCOMOTIVE MOTORS

New York City. This is known as the E. M. B. unbreakable, jointless and rustproof grid resistance.

Instead of building up a bank of grids, made of cast iron, and depending upon a tight surface contact at the bolt, to form the electrical connection between units as is the ordinary practice with resistances of this type,

the E. M. B. grid is made up of a continuous sherardized drawn steel wire. It is therefore not only extremely tough and may be subjected to severe abuse with impunity, but is rust-resisting as well.

The grids are composed of various sizes of steel wire to suit the current carrying capacity desired. At the point where the units of the ordinary cast grid come in contact, an extra loop of wire is employed. The tap or contact to the controller may consequently be easily and readily shifted or adjusted to secure proper acceleration.

The drawn wire of which the grid is composed entirely eliminates the possibility of weak or defective material entering into the construction of the grid. Heavy overloads do not seriously affect this resistance. The grids have been repeatedly subjected to a current which brought them to a white heat without warping or buckling the convolutions, which remained in as good shape as before except for the sherardizing.

The space occupied by these grids is about the same as that for the ordinary cast-iron resistance, they being assembled into sections or boxes of approximately the same dimensions, so that a change may be made from one type of resistance to the other without serious inconvenience.

This type of grid resistance is peculiarly adapted to heavy overloads or where the load is intermittent and severe, such as in steel mills, mine hoisting, traction work or mine haulage. Several mining locomotives used by various coal companies are now employing this type of grid with good results.

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The Schaffer Poidometer

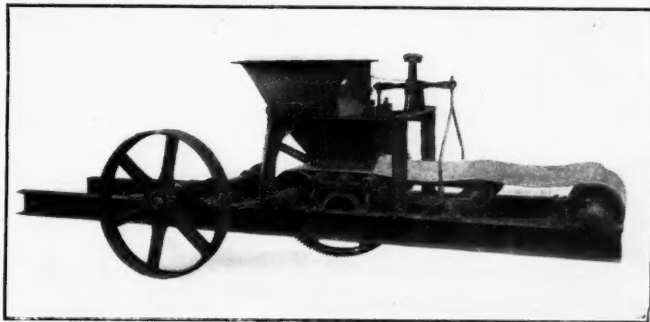
One of the most recent developments in continuous and automatic weighing machinery is the poidometer. This device is both a continuous weigher and a regulator. It is consequently of much advantage in many lines of manufacture where the machines can be arranged in batteries to automatically assemble a number of different materials in accurate proportion. These machines are thus of particular advantage at coke plants where it is necessary, in order to obtain best results, to mix several different kinds of coal.

In such a case each machine is arranged to handle a particular grade of coal at a given rate, and should any one of the machines run out of material to handle, it would not only itself stop, but stop the others.

The poidometer consists of an endless belt traveling over a head and tail pulley and supported in the center by a ball-bearing roller which is mounted on a scale beam. A system of levers attached to the scale beam operates a special gate mounted on rollers. These rollers travel on small tracks inclosed in a cast-iron housing, which is attached to the front of a special hopper, which is arranged for attachment to a bin.

The bottom of the hopper is fitted with gravity wearing shoes which are in contact with the belt. The opening in the bottom of the hopper where the shoes are attached is wider in front than it is at the back. Thus the belt in passing under it has the action of pulling the material away from the shoes and prevents it from dragging under. A subgate is placed in front of the hopper to prevent the pressure of the material coming against the regulating gate. The hopper is also provided with an agitator which prevents clogging of the machine.

The regulating gate is fitted with a double metal joint and is connected to the walking beam by pivoted points. The walking beam, the connecting-rod between the walking beam and the scale beam and the scale beam, are all mounted on knife edges, the scale beam also carrying the ball-bearing roller, which is located in the center of the distance between the last supporting roller under the hopper and the end pulley. This roller supports the belt and operates the regulating mechanism with the least possible amount of friction. The length of the scale beam and the weights employed are so proportioned that the weights will produce the number of pounds per



THE POIDOMETER

foot of belt indicated by the figures upon them. These weights may be changed and adjusted so as to give any desired delivery within the limits of the machine. When any machine for any reason does not receive material it makes an electric contact and stops all the machines in the battery.

The regulating and recording device is attached to a measuring drum placed under the belt directly in front of the driving pulley. This drum measures off the exact travel of the belt and operates the counting and tabulating mechanism. It also actuates a device for automatically stopping the machines when a predetermined quantity has been delivered. The device may be set for different amounts or quantities of delivery. To facilitate assembling materials into batches, a controller is provided which will automatically stop and start the machines at intervals. Thus any predetermined number of pounds of different materials may be assembled into a batch containing the exact amount of each ingredient every time. The interval for the machines remaining stationary after the batch has been assembled can be regulated to suit the time that is desired between batches. After this time has elapsed the machines will automatically start and assemble another batch with the same number of pounds of each ingredient as before.

The machine is mounted on a steel channel frame which may be extended when necessary to suit conditions. The driving machinery is all mounted on this frame, and the speed reductions are such that the machines can be connected direct to a line shaft or motor. Where a number of machines are installed in a battery they may all be actuated from one central drive.

These machines are built in five different sizes, ranging from 14 in. to 36 in. in width, and the capacity range is from 1½ lb. per min. up to 5 tons per min. They are guaranteed to give an accuracy of 99 per cent. The poidometer is patented by J. C. Schaffer and is built by the Schaffer Engineering & Equipment Co., of Tiffin, Ohio.

Editorials

No Consignment Coal from Southern Illinois

In times past a great deal of consignment coal from southern Illinois mines was forwarded to Western distributing centers and sacrificed regardless of price. This coal was usually consigned to jobbers with instructions to effect disposition at any figure in order to obtain immediate cash for payroll requirements. Two companies guilty of this practice in past years have been obliged to shut down their operations, and the balance of the field has kept free coal absolutely off the market this season. This has been a most important factor, in the face of the dull summer demand, in maintaining prices for southern Illinois coals. The companies which indulged in the practice of shipping consignment coal are now bankrupt, because as a rule this was sold below the cost of production.

In some of these mining districts, when surplus coal is now accumulated, particularly screenings, it is dumped on the ground awaiting a favorable turn of the market for reloading and shipment against bonafide orders in hand. This maintains a much more healthy condition than was the case with the old method of shipping consignment coal to jobbers to be sold at any price.

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Egyptian State Ry.'s Contract

American shippers would find it difficult to conform in all respects to the coal "specification" sent out by the Egyptian State Railways and Telegraphs. Besides the items noted in another column, summarized from the ten quarto pages of the pamphlet issued, there are certain stipulations that sound rather drastic. The strike clause, for example, gives the right either to cancel the unfilled portion of the contract or to compel the contractor later to make good the deliveries which would otherwise be made were no strike in force. Purchases in the open market can be made for account of the contractor when in the judgment of the buyer there is failure to deliver in season.

It is also interesting to note that the buyer reserves the right not only to reject coal at the loading port and to require cargoes to be loaded in daylight, but that if the cargo is made up from more than one colliery the inspector can have the coal from each colliery sampled separately and each regarded as if it were a separate cargo. The tests, however, are to be made before shipment. Only coals like those from the Fairmont, W. Va., district would be eligible, anyway, because of the volatile requirement. On the point of ash the specification is not so exacting.

It is almost amusing to observe that while chartered bottoms are to be loaded by the Welsh contractors "with the utmost possible dispatch," they must in any event load a 5000-ton steamer within 180 hr., or nearly 8 days if 24 hr. is a working day, "time occupied in bunkering not included!" With loading at Hampton Roads

at the rate of 7280 tons of cargo and 189 tons for the bunkers in 2 hr. and 45 min. there should be no difficulty in meeting this condition.

With freights at \$11@12 to Mediterranean ports, the deposit required is quite excessive. And with the further provisions that settlements are to be made "check on London" when cargo is discharged, payment of freight to be arranged by the shipper, and the limit as to size of ships, it seems unlikely that American shippers will be enthusiastic about this particular business in Egypt. In future years, if additions are made to the American steamers now being built for the Mediterranean trade, it may be that conditions will be modified and that American shippers will be successful competitors for such contracts.

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Some Notes on the Western Coal Rates

The recent decision of the Interstate Commerce Commission grants advances in rates from Illinois mines to Northwestern points of 5c. to 10c. per ton. At the same time there is no provision for advances in rates on coal moving from the docks at the head of the lakes to the same points. It is thought that some of the railroads, recognizing the unfortunate results of checking in these advanced rates, may feel inclined to waive their privilege unless such advances can be made to apply on competitive coal from all other districts moving into the common Northwestern markets. It is currently reported that most of the carriers serving the mines in Franklin and Williamson Counties have informally told the operators of those districts that they will not take advantage of these increased rates, for the time being at least.

The prices received in later years for fine coal from Illinois mines bring much more revenue to the coal companies than formerly, when slack was practically without a market. The carriers have never received proper compensation for hauling any grades of coal, and the commission apparently believes that they should now be favored in a substantial way. They hold to this opinion irrespective of the competition from lake coal and the fact that the Northwestern States are the more logical market for southern Illinois coals than the Eastern product from West Virginia, Pennsylvania and Ohio moving via the docks. Inasmuch as Commissioner Daniels dissented vigorously from the decision of the other members of the commission and states in substance that the question was not decided upon its merits, it is strongly hinted in certain quarters that a rehearing of the whole case is not only possible but necessary in fairness to Western coal producers.

This is the second advance in freight rates on coal moving from Illinois mines to Northwestern points in the last three years, and most of the Illinois operators would not object to the recent increase, and think it would do no damage, if the carrying charges on dock

coals were advanced proportionately. A close analysis shows that the average increase is a fraction less than 10c. per ton. The territory affected is that west from Chicago to the Rocky Mountains, except South Dakota points. As the case now rests, a large amount of business to Northwestern points will be absorbed by the docks and taken away from the Illinois and Kentucky mines. The decision is of some benefit to the Iowa producers who ship coal into outlying points of Iowa, southern Minnesota and Nebraska.

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The Reduction in Anthracite Freight Rates

The recent order of the Interstate Commerce Commission directing the coal-carrying roads to reduce the rates of freight on anthracite seems to have been based by them on their finding that "anthracite coal is a low-grade commodity" compared with other classes of freight. Of course it is not likely to find all interests in agreement on this point, but inasmuch as the commission has spent three years in arriving at this conclusion, it is certainly reasonable to suppose that they have gone into the question with greater care than anyone else except the railroads, and for that reason their finding must be given its just valuation.

It is extremely difficult to forecast the probable effect of the decision, for the reason that its provisions will not likely be operative for a few years. That the order will be appealed, goes without saying. As a matter of fact, the various railroads concerned have already met to determine jointly what action they will take. There are some who will even criticize as collusion the fact that the attorneys of the various roads have dared to meet and discuss this subject among themselves. However, when it is remembered that the action for a reduction of rates was brought against the railroads jointly it will be seen that there was practically no basis for any such adverse comment.

The source of appeal on a point of law is to the United States Supreme Court and the manner of the appeal is the only question to be considered by the railroads, and it is not at all certain that the railroads will be a unit on this point. This is because the order affects some roads to a very much greater extent than others. For instance, the Delaware & Hudson and Ontario & Western R.R. declare that the proposed rates as affecting their respective companies are so drastic as to be practically confiscatory, and it is on this ground that they are likely to make their appeal.

In making its decision the Interstate Commerce Commission probably had in mind the order of the recently created Pennsylvania Public Service Commission, which a year ago ordered the railroads to make a reduction of 40c. per ton on anthracite to Philadelphia and vicinity. As is well known any order of the national commission has no effect on intrastate traffic, and the present order of the interstate body seems practically to equalize the intrastate and interstate rates. For this reason the supporters of the Pennsylvania commission point to the order of the Interstate commission as confirmation of the Pennsylvania action. The Pennsylvania decision is in abeyance at this time, having been appealed by the coal companies, but those who favor it are now satisfied that it will be upheld.

The people who are apparently most satisfied with the rate orders are the coal dealers and the individual operators. The former declare that their present profit is so small as to almost preclude the possibility of putting the retail coal business on a basis commensurate with other profitable mercantile enterprises, while the individual operators claim they will now have a fair field in competition with the railroad-controlled companies who produce approximately 80 per cent. of all the anthracite coal now being mined.

This leaves the consumer entirely out of the calculation. It is barely possible should the new rates really become effective that he will be benefited, but it is also absolutely certain if the drain on the carrying roads by reason of the new rates should be such as to financially hinder them the consumer will be the man to bear the burden—not in a feeling of revenge, but because of absolute necessity; for it is no more possible to operate a transportation line without an adequate income than it is to run the ordinary corner grocery without any return.

For the time being, so far as the consumer and retail dealer are concerned it is a waiting game; but for the others it is a time of incessant action. It is possible that pending the appeal the retail dealer may receive some rebate on all freight paid from the time the new order becomes effective. This was the course followed in the appeal from the decision of the Pennsylvania Public Service Commission. The railroads entered bond to repay the difference should the rates be decided to be in accordance with law.

This latest decision is only another proof that the transportation business of the country is in a transitory state, and it is sincerely hoped by everyone concerned that the end of the unrest is in sight and that the final adjustment will be such as to conduce to the equity and satisfaction of all concerned.

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The Shake-Up in the Middle Western Freights

Anthracite shippers are uncertain as to the results which will follow the recent decision of the Interstate Commerce Commission in which an advance of 25c. in the rate to Chicago territory was approved. So far no changes have been made in prices, but some jobbers look for an early advance on the part of the wholesalers to absorb the increased freight rates.

The outcome of the recently developed bituminous rate situation is also problematical. This increase becomes effective Sept. 30. The docks will undoubtedly benefit from this decision as it now stands, but so far the Western carriers show no disposition to take advantage of the decision and advance rates, as to do so would mean a falling off in the heavy and increasing tonnage from Illinois and Kentucky mines.

The roads do not seem to know what course they are going to pursue, which has made future plans of the operators uncertain. The next six weeks should see a considerable volume of increased shipments at the lower rates now in effect. If these rates are effective beginning Oct. 1, Western operators will have a smaller selling zone, which means congestion of tonnage and lowering of prices. What readjustment will be the outgrowth of this verdict is problematical.

Sociological Department

First-Aid Contest in Crowsnest District, British Columbia

By E. JACOBS*

For years instruction has been given in first aid in the coal-mining centers of British Columbia, and as a result there are at every operating coal mine many men competent to render first aid in any emergency. Last year Dudley Mitchell was appointed instructor in first aid for the Provincial De-

partment of Mines. He has since that time aided in organizing first-aid classes, not only among metalliferous miners, but also among those working in coal mines. He has also given instruction in the use of oxygen-breathing apparatus and the pulmotor and has trained the corps in mine-rescue work generally.

Classes for instruction in first-aid have been organized at Corbin, Michel, Fernie and Coal Creek, in the Crowsnest dis-

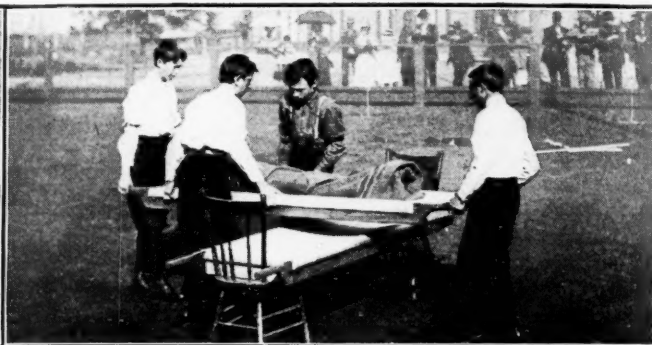
trict; at Merritt, in the Nicola district; and at Ladysmith, Extension, South Wellington, Nanaimo, Cumberland and Bevan, all on Vancouver Island. Between 300 and 400 persons, in all, attended these classes, and more than one-half of those who took the full course afterward passed the prescribed examination entitling them to the certificate of competency of the St. John Ambulance Association, which certificate is recognized in all parts of the British Empire.

For some time past active interest has been taken in the first-aid movement by W. R. Wilson, of Fernie, general man-



FERNIE TEAM WHICH RECEIVED FIRST PRIZE

From left to right, in rear—C. McNey; J. Hamer, captain, and A. Bunch; in front—W. Whalley and R. D. Winstanley



FERNIE TEAM OF BOYS LIFTING PATIENT OVER OBSTACLE

This team won the first prize for juvenile contestants and did excellent work. Note how careful they are not to jar patient

ager for the Crow's Nest Pass Coal Co., and the superintendents and other officials of that company's many coal mines and coke-oven plants. About three months ago a first-aid contest was arranged to be held at Fernie early in July, and representatives of the Coal Creek and Michel collieries and the coke plants at Michel and Fernie met and adopted rules under which this contest should be held. Meanwhile the first-aid men practised zealously, and enthusiasm spread throughout the three camps, until when the various contests were held there was an attendance of 800 or more to witness the efforts

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EXECUTIVE COMMITTEE, ST. JOHN AMBULANCE ASSOCIATION, CROW'S NEST PASS CO.

From left to right, back row—Dudley Michell, provincial government instructor in first-aid and mine-rescue work; G. O'Brien, district inspector of mines; Ed Hesketh, T. Uphill, Thomas Russell, manager Michel colliery; T. H. Williams, district inspector of mines; Bernard Caulfield, manager Coal Creek colliery; J. Biggs and J. Mason. Center row—W. Whitehouse, J. Touhey, J. Millburn, R. Spruston and Isaac Haile. Front row—C. J. Tyler, A. Bunch, J. Hamer, A. Hancock, Ed Harrison and W. Lancaster



TEAMS OF FERNIE AND MICHEL MINERS CONTESTING AT FERNIE, B. C., IN A FIRST-AID MEET

of the competitors, and this, too, notwithstanding that the weather was rainy.

Michel sent four adult teams, and Coal Creek three and also one of boys, while Fernie was represented by four teams of men and one of boys. As each team consisted of four competitors and a patient, there were 55 men and 10 boys taking part in the contest.

MEN'S CONTEST

The men's teams representing Michel colliery were captained respectively by A. R. Stacy, R. L. Spruston, J. Touhey and J. March; those of Fernie by J. Hamer, W. Hunter, J. Monks and J. Taylor, and those of Coal Creek by E. Harrison, J. Caulfield and R. Johnson. A first prize of \$50 and a second

first-aid conducted by the St. John Ambulance Association is as follows:

	First Year (Certificate)	Second Year (Voucher)	Third Year (Medallion)	Fourth Year (Label)	Total Qualified
Michel.....	13	6	1	3	23
Fernie.....	59	2	1	1	63
Coal Creek.....	42	7	1	3	53
Total.....	114	15	3	7	139

Taking the total number of employees at approximately 2000, it will be seen that the result of this year's instruction is that there is among the company's workmen one man trained to render first-aid for every 14.3 men employed.

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Workmen's Compensation and Coal Mining

A new method has been adopted by a group of well-known casualty-insurance companies for inspecting and rating the relative value of each hazard which goes to make up the total accident risk in a coal mine. Perfection of the method adopted has necessitated the establishment of standards for each separate safety measure which may be adopted in coal-mine operation. Every risk within the mine which is less imminent than the standard will earn a reduction in the base premium rate adopted for the state, and those operations in which the risks are more threatening than the standard will be required to pay a higher annual premium for the insurance of their workmen.

MAKING SAFETY PROFITABLE TO THE OPERATOR

In other words, coal-mine operators who are endeavoring to appraise their respective liabilities under workmen's compensation may change their unknown obligations in this regard into fixed known liabilities by insuring themselves against their risks. They will be given by the agencies of insuring companies a base rate. A careful and scientific inspection will then be immediately made of the mine by an experienced mine inspector, and he will rate each element of risk in the mine as being above or below the standard adopted. There will result therefrom a merit or schedule rating which may materially reduce the amount of premium that the mine owner will have to pay for insurance under workmen's compensation, or it may increase it, thereby offering the owner in the form of a premium reduction a monetary incentive to make his mine more safe.

It is evident that here is a new and benign influence in the mining industry which will increase safety in mining and make corporations realize that the price of



COAL CREEK TEAM CARRY PATIENT UPSTAIRS

Notice the interest shown by the "kiddies" in the rear, showing how popular is first-aid

of \$25 were offered for competition by these teams. A Fernie team consisting of J. Hamer, captain, C. McNey, A. Bunch, W. Whalley, and R. D. Winstanley, patient, won the first prize.

For the second prize the competition was so close that the judges decided that one of the Michel teams and one from Coal Creek were equal, so each was awarded \$25. The members of these teams were as follows: From Michel, A. R. Stacy, captain, C. J. Tyler, W. J. Spruston, W. Touhey, and J. Horrocks, patient; from Coal Creek, E. Harrison, captain, Isaac Haile, J. Millburn, W. M. Branch, and James Young, patient. The judges for this competition were Doctors Bonnell, Burnett, Corsan and Moore.

BOYS' CONTEST

A first prize of \$25 and a second of \$15 were offered for competition by boys' teams. There were only two entries—one team from Fernie and one from Coal Creek. The first prize was won by the Fernie boys, who were: A. Woodhouse, captain, C. Stockwell, H. Quince, A. Rees, and T. Baker, patient. The second prize fell to the Coal Creek team, consisting of J. France, captain, A. Branch, J. Cartmell, H. Hartley, and H. Evans, patient.

After the contest, W. R. Wilson gave a dinner to all members of the first-aid classes of the St. John Ambulance Association; for the Fernie and Coal Creek men at Fernie and for the Michel men at their own home town. A concert followed the dinner at Fernie, and the day's proceedings terminated with a general resolve to make the first-aid contest an annual event.

The record of the employees who attended classes of the Crow's Nest Pass Coal Co. and passed the examinations in

safety must be expended whether in payment for insurance or in outlay for safety. This will make all companies face the question squarely and prevent operators who do not have a due sense of their duty from underbidding those who expend large sums to keep their mines in safe condition.

DEPARTMENT OF INSPECTION AND SAFETY FORMED

As an evidence of good faith to the mining industry and to such mine owners as may insure with the associated companies, the latter have organized as their medium of doing business a department of inspection and safety, and as an evidence that this department is to be conducted on thoroughly scientific and practical lines and so far as possible in the interests of and in full cooperation with all elements of the mining industry, they have secured as director of the department the services of Herbert M. Wilson, formerly engineer in charge of the Pittsburgh experiment station, United States Bureau of Mines.

Mr. Wilson's long association with the late Dr. Joseph A. Holmes, director of the Federal bureau, his well-known interest in safety in mining, the cooperative spirit which he has heretofore shown in dealing with mine operators, mine workers and state inspectors, and his wide personal acquaintance with men interested in the mining industry assure the adoption of a system of mine inspection which should be of great assistance to the mine owner as an auxiliary to his own inspection and safety measures, as well as one which should develop the most reasonable premium rates commensurate with safe business practices.

This association proposes not only to inspect the mines of the insured for the purpose of fixing rates, but it proposes to reinspect these mines periodically for its own protection and that of the mine owner and so that it may give reduction in premium rates whenever they are earned by the operator's adoption of safer methods. Of equal importance to the insured mine owner is the assurance that the department of inspection and safety will advise him as to methods in which dangerous conditions may be eliminated.

IMPROVEMENTS MADE OUT OF INSURANCE SAVINGS

Under such a system practically and technically applied the mine owner will be enabled to earn such reductions in the premium rates that the cost of his improvements to assure safety will be returned to him within a year or two by reductions earned in his premiums. Some of the safety methods adopted by corporations, such as additional inspection, are believed to have resulted not merely in reducing accidents, but in improving the product and even in lowering its cost. So some, at least, of the expenditures for accident prevention and part of the cost of insurance will be offset by the economic advantages gained by the precautions taken.

As an evidence of the financial strength behind this movement and its resources for carrying out its work it is only necessary to recite the names of the ten powerful casualty-insurance corporations forming the "Associated Companies" which have pooled their interests for insuring coal mines in compensation states, namely: The Aetna Accident & Liability Co.; Aetna Life Insurance Co.; the Employers' Liability Assurance Corporation, Ltd., of London, Eng.; Hartford Accident & Indemnity Co.; Lon-

don Guarantee & Accident Co., Ltd., of London, Eng.; Maryland Casualty Co.; the Ocean Accident & Guarantee Corporation, Ltd., of London, Eng.; the Standard Accident Insurance Co., of Detroit, Mich.; the Travelers' Indemnity Co., and the Travelers Insurance Co.

The above plans will be carried out only in those states which have enacted compensation legislation applying to coal mines and where the terms of legislation or regulations will permit stock insurance companies to do business, namely: Colorado, Illinois, Indiana, Iowa, Kansas, Maryland, Michigan, Montana and Pennsylvania.

The methods adopted by this association will not only follow closely the requirements of the best state mine-inspection laws, but also those safe practices which have been developed in the Bureau of Mines. It was with this object in view and in order that this work might be kept in close touch with the mining industry as well as with the Bureau of Mines that Mr. Wilson has fixed his office in Pittsburgh, Penn.

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American Mine Safety Association

The impression seems to have been conveyed by articles appearing in the technical journals that the American Mine Safety Association has ceased to exist. President A. F. Knoefel and Secretary H. M. Wilson give the assurance that this is by no means the case, but that it is not only very much alive, but will be more active than in the past, though under another name.

The recent ballot concerning the amalgamation with the National Safety Council was almost unanimously in favor of such action, and it is said that the executive committee of the latter also favors taking over the American Mine Safety Association as the mining branch. The effect will be to practically centralize all safety movements within the National Safety Council.

The American Mine Safety Association will hold its annual meeting as contemplated in Birmingham, Ala., Sept. 3, and it is expected that it will take a recess to reconvene Oct. 20 at the annual meeting of the National Safety Council, in the Bellevue-Stratford Hotel, Philadelphia, as the mining section thereof. At that time there will probably be elected officers and committees of the mining section for the purpose of carrying on the activities of the American Mine Safety Association along lines identical with those heretofore followed.

In addition the members will receive the weekly safety bulletins of the National Safety Council and its correspondence service on safety subjects, and there will be a decided strengthening of the local branches through the opportunity to include in their activities not only safety in mining, but also in railways, manufacturing industries, public service, etc. Any mine-safety organization should be thus broadened, because the metal-mining industry desires an organization covering mills, smelters and railroads as well as mines.

We are further advised that persons taking out memberships in the American Mine Safety Association prior to the consummation of the proposed consolidation in October will have the privileges of membership in the larger organization for the ensuing year, but at the lesser rate of membership dues called for by the American Mine Safety Association.

Discussion by Readers

The Dr. Holmes Memorial

Letter No. 1—Referring to the editorial in *Coal Age*, July 31, p. 177, entitled "A Memorial for Dr. Holmes," I beg to say that I am heartily in accord with such a movement and believe something of the sort should be done.

Of the two ideas mentioned in your editorial, my preference would be for the book rather than the monument. The monument would be seen by comparatively few, especially of mining men who would be most interested. The book, on the other hand, would be available to every mining man sufficiently interested to want to possess one. The book would give the readers thereof an insight into the life, work, character and personality of Dr. Holmes, which many will be anxious to get and which would otherwise be unavailable. The book, I believe, would be an inspiration to all who read it. I vote for the book.

EDWARD H. COXE.

Knoxville, Tenn.

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Labor in Mining

Letter No. 8—I read with much interest the able support of the United Mine Workers of America by Hugh Archbald, *Coal Age*, July 24, p. 124; but was surprised to find an efficiency engineer advocating a cause whose principles are the antithesis of efficiency in coal mining.

Direct contact with pit committees and the discussion of matters relating to this organization both with miners and operators, together with the reading of the *United Mine Workers' Journal*, technical magazines and comments of the general press, have fully convinced me that the recognition of the union as it is now managed is wrong in principle and against the interests of the operator and general public policy. My conclusions are based on the following four counts:

1. The organization, under its present management, assumes to usurp the functions of ownership of the mine and infringes on the rights of the individual miner.
2. Its tendency is to destroy the discipline of the mine and to hinder the enforcement of the rules and regulations designed to safeguard the work of mining.
3. The methods adopted by the officers of the union to secure their ends tend to foster discord among mine workers, the majority of whom are coerced to act in opposition to their better judgment.
4. The direct result of the application of these principles is a decrease in efficiency in the operation of the mines.

Referring to these counts, singly and in detail, the organization usurps ownership of the mine by depriving the owner or his agents of the right to hire and discharge their employees at will. Mines have been shut down by order of the union because a slate-picker was employed who was not approved by some influential members of the union. In another instance an entire division of the company's mines was closed down because the demand of

the union for the discharge of the district superintendent was refused. The superintendent in question was a man of the highest technical ability and character. Other mines have been shut down for the discharge of members of the union for the willful violation of mining rules and regulations.

The organization infringes on individual rights by forbidding superintendents and foremen to make any agreements with a miner in their employ that is not sanctioned by the scale. For example, at a mine in the West under my charge the scale was \$3.10 for an 8-hr. day. It so happened that the boarding boss—a man who had never been in a mine—was promised a job when a vacancy occurred that he could fill, and as a result was employed a little later as a car-greaser. His pay was \$3.10 a day, according to the scale. Shortly after, the inside mechanic said to me: "It looks mighty hard for a man who has worked in a mine since he was eight years old to draw the same pay as that old plug who never saw the inside of a mine till yesterday." I replied: "Nick, what you say is true. The car-greaser's job is worth but \$2 a day, and the man would be glad to take it at that, while your work is worth more than the scale paid. If I was free to do as I pleased, I should pay you \$4 a day and the old man \$2 a day, and everybody would be satisfied; but your committee says, 'Pay every man the scale, whether he is worth it or not.'"

Where the scale exceeds a minimum wage, the company must in self-defense make that the maximum wage; and as a result I have seen every man make a maximum day's loading. I remember a large mine where the turn was limited to four cars to each miner. When he had loaded that number, he could load no more. Mr. Archbald discussed this point in a previous article, *Coal Age*, July 10, p. 48. Absolute impartiality in all dealings with employees is a prime qualification of a mine foreman or superintendent, and plain justice demands that each and every miner be given an equal opportunity to load coal and that the scale should discriminate between the mining of pillar coal and the driving of rooms and entries.

In the fixing of a scale, regard must be had to the interests of the operator as well as those of the miner. The efficient operation of the mine requires that every miner be allowed to put out as much coal as he can load, the turn of cars being distributed so that each man is encouraged to make his time, skill and strength tell to the best advantage. The principle of equality of pay at a given mine can be applied only by holding back the steady, industrious and skilled workman so that he does not rise above the level of the one less steady and skillful. It would be a hard proposition to raise the latter person to the level of the former. The miners' organization does not attempt to do that.

In respect to the work of the organization destroying the discipline in a mine, it is only necessary to consider how the authority of the foreman or superintendent is curtailed by the fear of precipitating a strike by the

discharge of an employee for suitable cause. Any abridgment of the power to discharge an employee seriously impairs discipline in any industry. By their opposition to many rules and practices designed to safeguard the work of mining or to the discharge of men for violation of rules, the organization has handicapped mine discipline. Such opposition has frequently rendered a good rule inoperative. According to statements in the press, the fines of members convicted of violating rules have in some cases been paid by the organization. Mines have been closed down because shotfirers did not fire shots that in their judgment were unsafe. The opposition by the organization to the use of permissible explosives is too well known to require more than passing mention.

In deciding the value of the organization to the miner, the question may well be asked, What has it done to advance his standard or to lift him to a higher level? The union displays no pride in the attainments of its members and makes no endeavor to raise the standard of vocational excellence. It does not attempt to increase the miner's earning power by increasing his knowledge and efficiency as a workman. It makes no effort to purge its rolls of the inefficient or vicious. Its membership card is no guarantee of the ability of the holder to perform work in the mine. Instead of striving for these attainments, its whole endeavor is simply to increase its membership, so as to enforce its demands by virtue of its numbers and not by merit.

Compare these conditions with the work that has been done during the past 20 years to raise the standard of technical excellence and personal integrity among mine superintendents, foremen and other mine officials. This work is still being pushed, and each year the standard is raised to a higher degree of excellence. Has the advancement of the miner during the same period kept pace with that of mine officials?

In considering further the right of the organization's claim to support, it is unnecessary to remark that no corporation can preserve its administrative power and divide its authority with another organization or committee. As a matter of public policy, any organization assuming to control industrial affairs to the extent that the United Mine Workers have attempted should be incorporated under the laws of the land, so that its acts may be subject to review by Federal boards and commissions, in the same manner as the railroads and other public utilities are controlled. All thinking men realize that the day of absolutism is fast passing, and the time is not far distant when labor unions will not be exempt as now from the application of trust laws. When labor unions become corporate institutions and claim no privileges not extended equally to organizations of capital; when they set up higher standards of vocational excellence and truer ideals of citizenship; when a union card bears some evidence of the fitness of its possessor; when union contracts are kept inviolate—then and only then will these organizations command the respect and support of the public and receive recognition by corporations.

Since leaving college, my life has been spent in mining camps, where I expect to stay. I have shared the bucket and bunk of the miner and know that many of the world's uncrowned heroes are to be found in his ranks. I am interested in the vocational excellence and skill of the miner as a fellow-workman and in fullest sympathy with every movement to increase his safety and comfort in the mine

and improve his living conditions. I desire his uplift, both as an individual and as a class, but no plans to this end will succeed unless the man himself is reached and taught his individual responsibility and the value of his personal work and efficiency to the general community in which he lives.

S. A. DRIVER.

Augustin, Ala.

Prohibition and Welfare Work

Letter No. 3—In reading the article entitled "Prohibition from a Miner's Viewpoint," *Coal Age*, July 17, p. 80, one is surprised at the question of its author. He asks, "Are we doing right by these miners?" At times I have been inclined to think that there is a certain amount of coddling indulgence permitted in our welfare work among the foreign-speaking miners.

The writer of the article to which I have referred has well suggested that "if you would put an end to a habit of any kind in men, women, or children, you must give them something in place of it." Among the foreign element in our mines the men worthy of uplift efforts in their behalf will suffer no hardships by reason of the prohibition movement that is so steadily gaining ground in many mining districts.

The thoughts and interests of this class of miners when they are deprived of their booze will seek another channel. The man who is worth while will not long regard as a loss what he knows never did him any good. He will be quick to embrace other diversions now offered in so many mining towns as a result of the earnest efforts of the Y.M.C.A. These diversions consist chiefly of reading rooms and classes, with the added attractions of bowling, billiards, ball and tennis grounds, swimming pools, etc., whereby he is enabled to pass his idle hours in a pleasant and profitable manner. The associations thus afforded bring him in contact with forces that will educate and lift him to a higher level.

I do not mean to say that this will be the result in every individual case; but while some drift away, like "Steve" and "Martin," whose letters written from West Virginia to the Ohio superintendent have been quoted, men who are worth while will stick to their jobs and attract to the mine a better class of workers. It must be remembered that a smaller number of orderly, industrious, steady-working, sober men will prove more efficient and produce better results than a larger number of noisy, carousing men who are idle much of the time, and are sullen workers at the best.

It is rightly conceded by the author of the article that "West Virginia coal-mine operators have done much for the uplift and social betterment of the mine worker"; but, as he states, "much remains yet to be done." That the coal-mine operators of West Virginia consider statewide prohibition as the greatest stride yet made in welfare work is evidenced by the active interest they showed previous to the election that resulted in a dry vote being passed. And since the passage of this law they have made every effort to encourage the enforcement of the dry laws in their own communities.

Following up, as they have, this master stroke of state prohibition with the steady development of many uplifting agencies, such as first-aid teams, athletic teams, prize gardens, night schools, etc., instituted by individual

companies, the West Virginia coal operators are not likely to experience much difficulty in obtaining a higher and more permanent class of labor. In closing, I desire to quote a paragraph from a recent issue of the *Journal of the American Medical Association*, which states clearly the average coal operator's conception of general welfare work. It is as follows:

Human life is gradually becoming recognized as a business asset. This is a new fact in the development of the race. Life insurance companies are realizing that they can increase their dividends faster by cutting down the death rate than by increasing sales or by reducing expenses. Employers of large numbers of human machines are realizing the surprising fact that as a cold business proposition it pays—not in sentiment but in dollars—to take good care of their employees. Business men are learning that well-fed, well-clothed, contented men and women, working in well-lighted, well-ventilated quarters and on schedules arranged in accordance with our modern knowledge of psychology and physiology, actually turn out more work and better work than underpaid, discontented help, working under unhealthful and uncomfortable conditions. Therefore large corporations are spending money liberally in playgrounds, restrooms, libraries, gymnasiums, sanitary lunchrooms, moving-picture shows, safety devices, ventilating systems and similar devices for the well-being and enjoyment of their employees.

If one asks these men why they are doing these things, they will disclaim any charitable or philanthropic motives. "This isn't charity," says one firm; "we want that clearly understood. This is simply good business management and common-sense. A well man is worth more to us than a sick man. A happy, contented woman turns out more work and better work than an unhappy one. Therefore, anything we can do to make the people who do our work feel at ease in mind and body we regard as good business management, just as we regard fire insurance, improved machinery and labor-saving devices." The firms that have realized the enormous importance of this discovery are already reaping the benefits. The conservation of the health of employees will be a fundamental principle of good business management in the future.

The foregoing citation from an outside source shows the appreciation of others for the efforts of the operators in the state.

F. S. JOHNSON.

Coalton, W. Va.

Mining Laws and Legislation

Letter No. 9—Referring to the controversy between Thomas Hogarth, *Letter No. 4*, *Coal Age*, June 5, p. 988, and I. C. Parfitt, *Letter No. 6*, July 31, p. 183, as to the relative responsibility of the mine foreman and his assistants, I agree heartily with Mr. Parfitt that the mine foreman is and should be responsible for the acts of his assistants. I believe this to be true whether the assistant in performing any specific act is doing so as a result of specific instructions or otherwise.

Speaking of the foreman, Mr. Hogarth says, "He can be held responsible only for the orders he issues and for the employment of those he believes to be competent men to act as his assistants." I would take strong exception to this statement; first, because I believe the foreman should be responsible not only for the orders he issues but also for the carrying out and enforcement of those orders to the extent if necessary of removing an assistant who fails to do so; and second, because one of the requisite qualifications of a good foreman is that he shall be a good judge of human nature, and if in the employment of an assistant whom he believes to be competent he errs in his judgment of the man, he and no one else should be held responsible for his error of judgment.

Every one around a mine has certain responsibilities, and every employee in a measure shares the responsibility of his immediate superior, but in my humble opinion

the ultimate responsibility for the safety of the men and the enforcement of the law rests with the foreman, who is or should be responsible for every act of every man he appoints to a position of trust or authority, whether or not such acts are the result of specific instructions. In like manner the superintendent is responsible for the acts of the mine foreman he appoints, except in matters for which the law holds the foreman responsible—a responsibility he cannot escape.

EDWARD H. COXE.

Knoxville, Tenn.

Education in Mining

Letter No. 2—I have noticed many references to the need of the education and training of miners, but it seems to me that there is not sufficient attention given to the working out of a practical scheme. Since the letter of A. M. Iner, *Coal Age*, June 26, p. 1112, I have seen no practical method suggested for interesting the great mass of miners in the matter of their own education and training, by means of which they could do better work and increase the safety of mining. Some good suggestions have been made in discussing welfare work—and recently the question was raised as to whether the coal companies, which are spending large amounts in this direction, are receiving adequate returns for their efforts.

In discussing the question of education, various reasons are generally given for its necessity, such as the reduction of mine accidents, the securing of more efficient workmen, more regular work, increased output of coal and greater harmony of operators and employees resulting in the avoidance of strikes and lockouts.

One point that has not been mentioned, however, seems to me an important one. I have observed that the educated miner will generally do quite willingly what he is told and will do it promptly like a trained soldier or seaman whose duty it is to obey orders. In the same way, a good citizen, a member of the community, must obey the laws and bear his share of the common burdens. On the other hand, I have observed that the uneducated and untrained miner fails to realize his personal responsibility as one of the mine workers, and if he does at all what he is asked or told to do, it is because of compulsion.

Ask an educated miner to stop loading a car and set some timber where it is needed to support the roof, and the chances are nine out of ten that he will do so at once, and you can pass on to the next place without feeling that you must return to see that your orders are obeyed. But the uneducated and untrained man, when ordered to set timber in his place, will tell you he does not have to, or if he promises to set the post, he will delay doing so, making it necessary for the foreman to watch him and stay around until the work is done.

The educated miner is a successful and independent worker, relying on his own ability as a miner. The untrained man is prone to regard himself as one of an organization of workers whose welfare will be protected by union contracts, which are his main reliance. Reference has been made to the fact that many coal miners are prone to regard every effort of the company that is put forth in their behalf as an attempt to further their own ends by securing more work from the miner. They are unwilling, for the most part, to think that these efforts are unselfish and intended for their good. The large majority

refuse to attend the night schools that are established and supported by many coal companies, explaining their indifference by many reasons.

The endeavor to improve mining conditions through the channels of education and training of mine workers meets with more success among the children. For this reason, our greatest efforts should be made in their behalf. Even here, objection is frequently made by the parents that they need the help of their children to support the family and that their small earnings will not permit them to send the children to school. In a few cases the claim has been made that the miner wants nothing free, but is able to pay for all he gets and will not send his children to a free school. But observe that if a charge was made for tuition at a school supported by the company, it would be styled by the same men as "robbery." So the work among children is not an easy proposition, and yet it is more hopeful than that among the older classes.

In this connection I want to suggest that there might be a system of education undertaken by the state, independent of the coal companies, which are always regarded as working from an interested standpoint. In the agricultural field the Government undertakes the education and training of farmers, generally, by sending men out through the country to demonstrate the best methods of growing grain and other products and of preserving the

qualities of the soil by the rotation of crops. Why should not the coal-mining industry be entitled to similar benefits designed to educate and train mine workers. The coal-mining industry is entitled to its share of benefit at the hand of the Government as well as the agricultural interests of the country. In making this suggestion I do not want to be understood as not appreciating the efforts made by individual coal companies. I simply want to suggest what might prove a more effective method of dealing with the indifference shown by mine workers to their own education and that of their children.

Speaking of the education of children, if they could be instructed in the science and principles of technical mining, up to the age of 16 years, we might confidently expect that they would enter the mines as efficient and safe workers, and the need of night schools for older men would disappear in a few years. It would be a grand thing if young men could enter the mines as trained workers and know how to lay a shot, handle a safety lamp, understand its construction, know the use of the barometer and other instruments, and understand how to put up sights in a mine or figure out a problem in ventilation. Let our efforts be put forth to work out this problem in a successful way.

OSTEL BULLOCK.

Cleaton, Ky.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Relation of Drop in Temperature to Altitude—Approximately, the fall in temperature (t), in the atmosphere, varies as the 1.4 root of the height (h) above the sea level; thus,

$$\frac{t_2}{t_1} = \sqrt[1.4]{\frac{h_2}{h_1}}$$

Applying this principle and assuming a temperature drop of 6 deg. at an altitude of 1000 ft. above sea level, the mean average temperature (t), for any altitude (h), expressed in thousands of feet, can be calculated approximately thus:

$$t = 60 - 6 \sqrt[1.4]{\frac{h}{1000} + \frac{2}{(h-2)^2}}$$

This formula assumes a normal sea-level temperature of 60 deg. F., which is the first term in the second member of the equation. The second term of this member accounts for the fall of temperature corresponding to the increase of altitude; while the third term expresses the effect of the radiation of heat from the earth, which varies inversely as the square of the altitude factor $h-2$, probably owing to the influence of clouds or vapor in the lower atmosphere.

Example—Let it be required to find the temperature, at an elevation of 8000 ft. above sea level, corresponding to a normal temperature of 60 deg. at sea level.

Solution—In this case, the altitude expressed in thousands of feet is $h = 8$; which substituted in the formula gives:

$$t = 60 - 6 \sqrt[1.4]{8 + \frac{2}{(8-2)^2}} = 33.5 \text{ deg. F.}$$

The mean observed temperature for this altitude as given in the table is 32 deg. F.

Average Temperature of Air Column—The average temperature of the air column extending from sea level to any altitude h expressed in thousands of feet, can be calculated with close approximation by the formula

$$\text{Average temp.} = 60 - 3 \sqrt[1.28]{h}$$

The mean average air-column temperature, as calculated by this formula, can be used to find the corresponding normal atmospheric pressure by substituting its value in the formula

$$p_h = 14.696 \left(1 - \frac{1}{53.28 T}\right)^h$$

The use of this formula will require a table of seven-place logarithms or more. In the solution of the following example, a ten-place logarithmic table was employed.

Example—Find the mean average air-column temperature corresponding to a sea-level temperature of 60 deg. F., for an elevation of 12,000 ft. above the sea.

Solution—In this case, $h = 12$, which gives for the mean average air-column temperature

$$\text{Average temp.} = 60 - 3 \sqrt[1.28]{12} = 39 \text{ deg. F.}$$

The absolute temperature is $460 + 39 = 499 \text{ deg. F., abs.}$

The Coal Age Pocket Book

Example—Calculate the normal atmospheric pressure for an altitude of 12,000 ft., using the mean average air-column temperature found in the last example, $T = 499 \text{ deg. F., abs.}$

Solution—Substituting the given values in the formula gives for the normal atmospheric pressure at this altitude,

$$p_{12,000} = 14.696 \left(1 - \frac{1}{53.28 \times 499}\right)^{12,000} = 9.359 \text{ lb. per sq. in.}$$

The Differential Method—The pressure of the atmosphere, per unit area, at any altitude x is due to the weight of air column above such point of observation. Air being compressible, any increment of pressure (δp_x), causes a corresponding minus increment of height ($-\delta x$); and, calling the unit weight of air w_x at the altitude x , we have

$$\delta p_x = -w_x \delta x \quad (1)$$

But the unit weight of air varies with the pressure it supports. Hence, calling this unit weight and pressure at sea level w_0 and p_0 , respectively, and that at any altitude x , w_x and p_x , we have

$$\frac{w_x}{w_0} = \frac{p_x}{p_0}; \text{ and } w_x = \frac{w_0}{p_0} p_x \quad (2)$$

Substituting this value in equation 1 and dividing both members of the equation by p_x , gives

$$\frac{\delta p_x}{p_x} = -\frac{w_0}{p_0} \delta x \quad (3)$$

But, the differential of a quantity divided by the quantity is equal to the differential of its Napierian logarithm.

$$\text{Hence, } \delta \log p_x = -\frac{w_0}{p_0} \delta x; \text{ or } \delta x = -\frac{p_0}{w_0} \delta \log p_x \quad (4)$$

Then integrating between the limits $x = 0$, and $x = h$, remembering that when $x = 0$, $p_x = p_0$; and when $x = h$, $p_x = p_h$, and subtracting the lower integral from the higher,

$$h - 0 = \frac{p_0}{w_0} (\log p_0 - \log p_h) \quad (5)$$

But the unit weight of dry air at sea level, normal atmospheric pressure (lb. per sq. ft.), is

$$w_0 = \frac{p_0}{53.28 T}; \text{ and } \frac{p_0}{w_0} = 53.28 T \quad (6)$$

which, substituted in equation 5, gives for the altitude corresponding to any pressure, under normal conditions,

$$h = 53.28 T (\log p_0 - \log p_h) \quad (7)$$

Or, expressed in common logarithms,

$$h = 122.68 T (\log p_0 - \log p_h) \quad (8)$$

For normal atmospheric pressure, at sea level, $p_0 = 14.696 \text{ lb. per sq. in.}$, and $\log 14.696 = 1.1672$; hence

$$h = 122.68 T (1.1672 - \log p_h) \quad (9)$$

$$\text{Or, } \log p_h = 1.1672 - \frac{h}{122.68 T} \quad (10)$$

Inquiries of General Interest

Standards in Analyzing Coal

Is there a recognized system of analyzing coal, and if so, where can a copy or outline of such method be obtained? In an analysis of coal, do the percentages of the different constituents refer to the weight of each constituent in the coal? What is meant by the heating value of the coal?

R. T. M.

Terre Haute, Ind.

It is generally conceded that the United States Government has worked out a system of analyzing coal that may be properly called a "standard of coal analysis." This system is described by F. M. Stanton and A. C. Fieldner, in Technical Paper 8, Bureau of Mines, entitled "Methods of Analyzing Coal and Coke." Poole's "Calorific Value of Fuels" may also be considered a standard work on this subject. Stillman's "Engineering Chemistry" and Olsen's "Quantitative Chemical Analysis" each give good workable methods for the analysis of coal.

To use any of these outlines, however, one must possess a good knowledge of chemistry. For this reason, I submit the following clear, concise method of analyzing coal, which will prove valuable to those not having a full knowledge of chemistry. In preparing this outline I have omitted all unimportant matters.

PRACTICAL SCHEME OF COAL ANALYSIS

Reduce the sample of coal to be analyzed to a fine powder that will pass through a 60-mesh screen.

Moisture—A gram of the powdered coal is weighed in a platinum dish and placed in a hot-air oven for 1 hr., at 105 deg. C.; then weighed again. The difference is the loss of moisture, and this weight is calculated to percentage.

Volatile Matter—A gram of powdered coal is weighed in a platinum crucible and heated under a bunsen burner, under standard conditions, for seven minutes and weighed again. The difference of loss is the volatile matter plus the moisture; subtract the moisture first found above, and the result is the volatile matter, which is calculated to percentage.

Ash—The gram of coal used for the moisture determination is placed over a bunsen burner and burned down to ash or constant weight. Subtract the weight of the empty dish from this weight and the result is the weight of the ash, which is calculated to percentage.

Fixed Carbon—Add the percentages of moisture, volatile matter and ash and subtract their sum from 100 percent. The result is the percentage of fixed carbon.

Sulphur—Mix 1 gram of powdered coal with 2 grams of "Eschka mixture," consisting of two parts of magnesium oxide (MgO) and one part anhydrous sodium carbonate (Na_2CO_3), in a large platinum crucible. Cover this mixture with a layer of the Eschka mixture and heat slowly over an alcohol flame for 30 min. Then stir the mixture

gently with a glass rod and heat to redness until all the black particles are burned away. Allow the crucible to cool and when thoroughly cold dissolve out the sulphates in hot water and filter the solution. Now precipitate the sulphur as barium sulphate (BaSO_4), by adding barium chloride to this solution. Wash the precipitate thoroughly and weigh. Then calculate the weight of sulphur as 0.137 of the barium sulphate precipitate and reduce this result to percentage of the gram of coal taken.

Heat Value (B.t.u.)—This is the only determination not reported as percentage. This value is found by means of a calorimeter, of which perhaps the best standard type is the Atwater-Mahler bomb calorimeter. A British thermal unit is not percentage; but is the amount of heat necessary to raise 1 lb. of water 1 deg. F., at its point of maximum density.

The foregoing determinations will be more easily understood by the lay mind, and though not scientific in some details, they are yet sufficiently accurate for all commercial purposes.

All commercial analyses of coal, except the determination of its heat value, are based on the weight of the sample analyzed, and the weight of each constituent found is calculated as a percentage of the original weight of the sample.

The heat value, or the calorific value, of coal is given in heat units, per unit weight of the coal. For example, a pound of coal having a heating value of 14,000 B.t.u. contains sufficient heat to raise 14,000 lb. of water 1 deg. F. or 140 lb. of water 100 deg. F., assuming there is no loss of heat in the operation.

The Coefficient of Friction of Treated Belts

Can you give any data showing the effect of treating belts with "Cling-surface" to increase the friction?

ENGINEER.

Cleveland, Ohio.

In answer to this inquiry N. G. Near writes as follows:

In connection with Robert Thurston Kent's recent tests on belts, where he used a belt treatment on one belt and none on the other, I have made computations for the coefficient of friction under both conditions from the old belt formula

$$\text{Log } \frac{T_2}{T_1} = \pm 0.4343 \mu a$$

where μ = the coefficient of friction; a = arc of contact; T_2 = tension on tight side; T_1 = tension on slack side.

Tests were made with arcs of contact of 125°, 135°, 153° and 180°.

Without treatment the average coefficient of friction is $\mu = 0.127$. With treatment the average value is $\mu = 0.163$.

The tests were static in nature. Power was not transmitted at the time of the test.

Examination Questions

Suggested Questions Relating to Breathing Apparatus

Ques.—What is the object of the breathing apparatus?

Ans.—It is designed to supply the wearer with a perfectly respirable air entirely independent of any communication with the outer atmosphere, for a period of two hours, thus enabling the wearer to penetrate (using due precaution) an atmosphere that is dangerous to life and will not support combustion, such as results from explosions or fires in mines.

Ques.—Name the principal features of the apparatus.

Ans.—1. The method of supplying the wearer with sufficient oxygen from a steel cylinder containing 10 cu.ft. of pure oxygen at a pressure of 120 atmospheres, or nearly 2000 lb. per sq.in., through a reducing valve, which reduces the pressure to normal breathing pressure and regulates the supply of oxygen to 2 liters or 122 cu.in. per min., which is the quantity necessary when performing strenuous work.

2. The method of absorbing the impurities, carbon dioxide and moisture, given off or exhaled from the lungs, is by the use of caustic potash or caustic soda, which takes up the carbon dioxide and moisture. The nitrogen of the air, being set free, circulates with the oxygen supplied from the cylinder at 2 liters per minute and thus furnishes the volume of fresh air that is necessary for free breathing.

Ques.—How would you prove that the apparatus is in a safe working condition?

Ans.—First, I would observe the gage or meter to see that the proper supply of oxygen was contained in the oxygen cylinder and fix the cylinder in the proper place on the apparatus, and prove by water gage or meter that 2 liters per min. of oxygen are being delivered.

Second, if the Draeger or Westfalia apparatus is used, I would remove the seals from the connections of potash cartridges and shake each cartridge to see that it is loose and rattling freely, when I would consider it in good working condition. This is the only test left for regenerator to the wearer, and is uncertain. If Proto or Fleuss apparatus is used I would examine the breathing bag to see that it is clean and that the inhalation and exhalation passages are free from obstruction and clean and the breathing tubes air-tight; also, that the proper amount of caustic soda (4 lb.) is placed properly in the bag, two pounds on each side. Then adjust all attachments together firmly, making the joints secure and air-tight. Now, apply the oxygen supply tube to the meter or water gage to determine that the proper supply of oxygen, 2 liters per min., is being delivered to the wearer. Being satisfied, put on the apparatus, inflate the breathing bag from the outside atmosphere, turn on the oxygen supply and go into a smoke-laden chamber for a short period of time and again determine that there are no leaks and that breathing is normal before entering a mine.

Ques.—What quantity of air must the apparatus be capable of supplying per minute?

Ans.—This is an indeterminate quantity, as the amount of air necessary depends on the amount of work being done, which is a vital point that the student should thoroughly understand. Haldane, in his tests, says, "In heavier work, such as ascending an incline or running, the oxygen consumed may amount to 3 liters per min. (183 cu.in.) while the volume of air breathed runs up to over 100 liters per min. (6102 cu.in.)." For ordinary work, 50 liters, or 3051 cu.in., of pure air per minute will suffice, while wearing a rescue apparatus. It is important, therefore, to see that the pipes, valves, etc., are of such a size that this amount of air can be comfortably obtained. Any undue resistance to the breathing would cause great distress and might be a source of danger.

Ques.—What quantity of oxygen must the apparatus supply per minute?

Ans.—The amount of oxygen arranged for by the makers of the apparatus is a constant supply from a steel cylinder of 2 liters, or 122 cu.in. per min. This should be regarded as a minimum when a man is walking about or performing moderately hard work. The store of oxygen carried should also be sufficient to maintain this supply for two hours, or for whatever period the apparatus is meant to be used.

Ques.—What quantity of carbon dioxide does a man produce during heavy work in two hours?

Ans.—That depends on the physical energy exerted, or the amount of work done. The Draeger apparatus must be capable of completely eliminating the 94 liters (34 $\frac{1}{2}$ cu.ft.) of carbon dioxide exhaled by a man doing work, during a period of two hours. After some severe tests with the Proto or Fleuss, it was shown that with an oxygen consumption of 2 liters per minute, about 220 liters, or nearly 1 lb., of carbon dioxide would be produced in two hours. This would convert nearly 1 lb. of pure caustic soda into bicarbonate or 2 lb. into carbonate. The tests indicate that 5 lb. of caustic soda would be a safe amount for work underground. The extra quantity is useful in diminishing heating. Since 1 cu.ft. of air (60 deg. F., 30 in. barom.) weighs 0.0766 lb. and the specific gravity of carbon dioxide is 1.529, the space occupied by 1 lb. of this gas at normal temperature and pressure is

$$\frac{1}{0.0766 \times 1.529} = 8\frac{1}{2} \text{ cu.ft.}$$

Ques.—What would you do if you found a feeling of suffocation coming on during work, while wearing the apparatus?

Ans.—I would stop work, inform those with me of my condition, use the bypass if there is one, and if doubtful as to the cause I would then retire to fresh air as quickly as my condition would allow. The cause may be insufficient supply of oxygen due to obstruction in valves or tubes: potash or caustic soda unable to absorb the carbon dioxide exhaled, due to a poor quality; defective breathing bag, or a leaky joint. Collapse may take place before I would be able to retire, and it may be due to overexertion; in which case rest and do less work.

Coal and Coke News

Harrisburg, Penn.

Chairman W. B. Ainey, of the Public Service Commission, has directed the Philadelphia & Reading Ry. Co. to install, within 30 days (from Aug. 17), passenger train service upon the Middle Creek branch, between Swatara Junction and Newton.

The railroad company claimed that the branch was constructed as a mine lateral, and not for the purpose of carrying passengers and that, therefore, the commission was without authority to make any order. Further objections were: Lack of necessity for its service; that the expense thereof would be too great, and that the passenger train would be run at a loss.

Chairman Ainey overruled all of these objections and held that, though the branch might have been built for the purpose of carrying coal, the Act of Assembly creating the branch railroad placed no such limitations upon it and that, therefore, it lawfully might carry passengers.

The decision is regarded as of much importance for the further point decided—which was that it is not an answer to a demand for passenger service to show that the particular train would be operated at a loss. "The first duty of a railroad," the Commission said, "is to perform its proper corporate functions, and, if carrying passengers is one of them, it must perform such duty or give up its charter privileges."

The expense of operating a particular train, involving a loss, may be of more or less importance in determining rates to be charged, but of itself will not justify a railroad in refusing to give to any community reached by its lines such service as may be needed and reasonably demanded by the public.

Can the Surface be Protected?

It will soon be determined whether there are resources in the law for the protection of public property from cave-in damages that are not available for the protection of private property, or whether the law has means of general protection that have not yet been revealed.

The case to be determined comes from the Scranton district. The state armory at that place is endangered by mining. The state armory board has made an investigation and has found that conditions were as represented, due to mining of the coal under the building.

Renewed effort is being made to find some means whereby a remedy may be secured from the cave-in menace. It has been held by some lawyers that public property is in a different class than private property, that notwithstanding deed stipulations, that the surface can be damaged, because the people who purchased the surface built upon it with the stipulation that the owner of the mineral rights be absolved from all liability, coal companies are obliged to protect school houses, streets, etc., the pipes supplying public utilities, and so on. It has also been held that the police powers of the state not yet thoroughly applied in test cases are ample to safeguard the people.

The case submitted to the Attorney General by the state armory board will be awaited with much interest.

Some Reports have been Filed

Considerable interest is being shown in the filing of the first reports of anthracite coal production under the new act (1915). August 20 was the day set for the filing of reports of the July output and a number of the largest anthracite producers did not file. Some leeway will be given by the Attorney General on the filing.

Some objections to the filing by the 20th have been made, because of the contention that the prices are not known much before that time. The contention has also been advanced that dredging is not washing coal and that coal dredged is not trouble, but the state officials take the other view.

It is probable that some stipulations regarding the coal tax assessment will be filed before many weeks.

PENNSYLVANIA

Anthracite

Nesquehoning—The payment of wages to the employees of the Lehigh Coal & Navigation Co. last week was the biggest for a long period, as the miners had been making full time.

Lansford—The employees of the Lehigh Coal & Navigation Co., in the collieries in the Panther Creek Valley are disinclined to accept the provisions of the workmen's compensation act which becomes effective with the first of the year. They claim that the new act is not nearly as favorable as the present code under which they are working.

Jeddo—In the villages of Jeddo, Oakdale, Highland and Harleigh, where collieries are operated, the G. B. Markle Co. is erecting transmission lines to supply electric current for the inhabitants.

Port Clinton—Coal shipments via the Schuylkill Canal, which have been growing less each summer, have now practically ceased. Heavy rains throughout the anthracite region have almost closed the channel with culm and it will take several weeks to restore the canal to navigable condition. It is reported in some quarters that it is the intention to abandon the canal entirely.

Hazleton—The collieries at Black Ridge, which have been operated for over 15 years by the Hazle Mountain Coal Co., have been abandoned, as the company no longer found it profitable to operate them, the veins having been worked out.

Scranton—Officials of the Delaware, Lackawanna & Western Coal Co. recently announced that workmen were still working day and night in an effort to discover the fire which is supposed to be burning in the old workings of the Bellevue mine under Luzerne Street in West Scranton. It is the intention to discover the cause of the hot waves which have been penetrating the other workings of the mine during the past two weeks. Search for the fire is hampered by the many subsidences encountered. It is possible that the fire if it exists, has burned itself partly out, but the intention is to continue the search until the cause of the heat is discovered.

The Hyde Park colliery of the Delaware, Lackawanna & Western Coal Co., will close down for a period of about 10 days while repairs are being made. The Taylor mine will also close down for the same length of time and for the same purpose. The other collieries of the company are working full time, and it is anticipated that this condition of affairs will exist for a considerable time to come.

Coaldale—The Lehigh Coal & Navigation Co. is preparing to remove the water from its No. 9 mine. This mine was flushed last December to extinguish a fire. When cleared of water it will furnish employment for about 100 men.

Bituminous

Johnstown—Highwaymen were foiled recently in their attempt to steal the \$10,000 pay-roll of the Greenwich Coal Co. Ordinarily the money was sent by express from here, but owing to the train being late the paymaster, Frederick Vinton, took the money in an automobile. On the same road over which Vinton passed in safety, a short time later the highwaymen attacked the driver of the express wagon and, of course, failed to get the money. The bandits, three in number, were afterward rounded up by two state policemen, one of whom, Daniel Duckler, was badly wounded by being fired upon by one of the men.

Jennerstown—The Berwind-White Coal Mining Co. is beginning to produce coal to be shipped to Italy as a part of the big 300,000-ton order recently awarded to the concern. The Consolidated Coal Co. is also mining for an Italian order.

Connellsville—Complete returns of the 1915 garden competition among the employees of the H. C. Frick Coke Co. were made public on Aug. 20, by the committee of judges. They reported that 6819 heads of families employed at the company's 56 plants, had taken advantage of the offer to cultivate company property, raising vegetables to the value of \$186,585. Only 270 of the plots available were not used, and the judges expressed the belief that some of this ground was so sterile as to make its cultivation unprofitable. The coke company buys these vegetables at the current market price.

Shipments of coke from the Connellsville region recently amounted to 378,000 tons per week, the shipments exceeding production. Merchant coke production has risen to nearly 150,000 tons weekly. This is a greater output than at any time since the first half of 1913.

Greensburg—Coal operators in the Greensburg region are reported to have taken all the orders for coal that they can fill between now and Christmas. It is said that every available miner in the district will be given work and all mines will work six days a week. Some mines closed down for years will be opened.

Uniontown—Options on 1300 acres of coal, including the greater part of the unsold coal land in Luzerne Township, Fayette County, have been closed by Pittsburgh interests for \$2,500,000. The option will expire on Sept. 10. The coal optioned is surrounded by some of the largest coal and coke interests. On the north are the holdings of the W. J. Rainey Co., on the northeast is the acreage of the Republic Iron & Steel Co., on the east is the land of the Tower Hill Coal & Coke Co., on the south are the holdings of J. V. Thompson, and on the west are the H. C. Frick operations. The coal, according to analysis, contains less than 1 per cent. of sulphur and is considered the best coking coal in the entire region. The options are on the following properties: Miss Adelaide Van Kirk, 65 acres; Mr. and Mrs. G. L. Hibbs, 115 acres; Misses Fannie and Laura Swan, 125 acres; W. J. Stewart heirs, 325 acres; Newall A. Porter, 140 acres; Columbus Porter, 187 acres; Mrs. James Chalfant, 160 acres; James West, 90 acres; Mrs. Sharpnack, 100 acres.

Pittsburgh—More than a dozen coal mines in the Monongahela River-Pittsburgh district have been speeded up during the past week. Coal production is now said to be at a higher rate than at any time this year. The shipments to Lake ports have increased, the steel trade as a whole is taking tonnage fully equal to the busiest season of 1913 and other industries not affected by the European war, have enlarged their consumption so that the demand is rapidly approaching a point where the mines will have difficulty in meeting it promptly. Exports of coal from the district, while rare because of the long rail haul to the seaboard, have actually taken place the last few days. While operators say the export trade will never directly affect this territory it will benefit it by broadening the home market as the demand from abroad will keep eastern mines too busy to supply the domestic markets adequately. According to estimates recently made, 7500 men have been added to the working forces of the coal mines in the district in two weeks, all on full time.

WEST VIRGINIA

Charleston—The following delegates have been appointed by Governor Hatfield to represent West Virginia at the American Mining Congress, to be held in San Francisco, Sept. 20-23: Edward Schoenebaum, George T. Watson, W. H. Koch, A. J. King, Edward O'Toole, E. E. White, Clyde Hutchinson, James Elwood Jones, George S. Patterson and R. P. Maloney.

J. H. Nightingale, commissioner of weights and measures, recently directed that all coal companies operating in West Virginia, pay the miners for the actual coal loaded. Heretofore a limit of 5000 lb. has been fixed as a carload, and all over that amount has been credited to the coal operators. On the other hand, it has been the custom to dock the miners for any shortage found on the cars.

Examinations for certificates as mine foremen and fire bosses will be held throughout the State of West Virginia at the following places and dates: Welch, Sept. 21-22; Logan, Sept. 28-29; Grafton, Oct. 5-6; Mt. Hope, Oct. 12-13; Charleston, Oct. 19-20.

Carlisle—Paul Nowack and John Balko, miners in the employ of the New River company, were discovered some time ago smoking their pipes in the company's mine at Carlisle. They were tried by a justice and fined \$20 and costs each. Since Feb. 6 last, the mines have been worked with safety lamps exclusively. On February 6 an explosion occurred killing 21 men. The flagrancy and persistence with which some miners take all kinds of risks in spite of the warnings and rules of the Mine Inspection Department is the cause of much chagrin and disgust to some of the department officials.

Fairmont—The action of the Baltimore & Ohio R.R. Co., in going into the market for additional coal carrying cars and locomotives, has been favorably commented upon by the operators in this section. It is stated that there is now beginning to develop a shortage of cars in the Fairmont district, where all the mines are in full operation, despite the labor shortage which for a time affected some of the operations. It is thought possible that a shortage of cars is not far distant. While railroad officials state that there are still plenty of cars, the surplus stock is rapidly disappearing; consequently large orders have been placed for immediate delivery.

Clarksburg—The Madeira-Hill-Clarke Coal Co. has received sufficiently large orders for export coal to keep the

three mines of the company working at full capacity for several months. These mines have been working part time for a considerable period.

Huntington—The Huntington mine rescue car will make a 10 months tour over West Virginia. The object of the tour is to train mine rescue and first aid crews, and to carry the propaganda of safety to the mines. The trip will cover the Chesapeake & Ohio and Kanawha & Michigan lines, and the itinerary of the car will be ready for publication in a few days.

VIRGINIA

Norton—The coke ovens of the Colonial Coal & Coke Co. at Dorchester, and those of the Stone Gap Colliery Co. at Glamorgan are now all in full operation six days per week, while all mines are operating full time, turning out their full capacity.

ALABAMA

Montgomery—The lower house of the Legislature recently passed by a vote of 66 and 31 a bill which, if eventually enacted, would prevent the state after Jan. 1, 1918, from leasing any convict serving a sentence of five years or less to any corporation, and would further after Jan. 1, 1920, prevent the leasing of any convict under any sentence whatsoever. There has been much agitation over the leasing of convicts to coal mining companies, and it is estimated that the result if the action of the House is sustained by the Senate, will be to remove the convicts from the mines and put them to work in farming and road-building in various sections of the state.

KENTUCKY

Logmont—Extensive improvements have been made in the plant, mine equipment and camps of the Luke & Drummond Coal Co., which were taken over some time ago by the Crystal Coal Co. Thirty new houses are being built for miners and all the existing houses have been put in good condition. Fifty new cars have been put into service thereby giving the loader a full turn and more cars will be added. A new fan house has been constructed and all the air-ways and brattices put in order. The incline to No. 3 mine has been double tracked, boilers overhauled and the railroad track extended so as to hold about 25 cars. The commissary will be enlarged and the stock extended. The company has advertised for coal loaders and is pointing to separate schools, a well-ordered camp, payment on the run-of-mine basis, etc., as inducements to labor. The Poplar Lick vein has been opened and will be developed in the near future, it is stated, the vein running from 4 to 6 ft. in thickness. The old Sagamore Coal Co., formerly operated this vein. The Crystal company is under the same management as the Climax Coal Co. at Edgewood. Hiram Silvers is superintendent and Frank Clutts mine foreman.

OHIO

Columbus—The New Method Coal Co. of Columbus, which is developing a stripping proposition in Jefferson County, Ohio, is progressing satisfactorily in the development work. Two large steam shovels have arrived and are being installed. It is hoped to start loading coal by Oct. 10 at the latest.

Millfield—Fire, caused by a gas explosion was discovered in Mine No. 6 of the Poston Consolidated Coal Co. early Aug. 21, and all efforts of the local officials to extinguish it failed. As a result the Ohio Mine Department was notified and J. M. Roan, Ohio Mine Inspector, left on the mine rescue car at noon, Aug. 21, to take charge of the situation.

Bridgeport—Seven thousand dollars were distributed among 3500 miners of this section recently, giving \$2 each on what is known as the "unemployment fund" of the miners' organization. Since the scale was signed work at the mines has not been plentiful. The 3500 men have been idle ever since the strike was declared.

Cambridge—The work of pumping out the Kings mine of the Akron Coal Co. has been started and it is planned to resume operations. The mine has been idle for several years and it was filled with water. The mine formerly gave employment to 200 miners.

INDIANA

Boonville—The Big Four Coal Co. is installing electrical and new shaft equipment, to cost \$75,000. The coal will be hauled by motors two to three miles underground.

ILLINOIS

Belleville—The shaft of the Summit coal mine, owned by the Summit Coal Co., on the Louisville & Nashville R.R., near here, caved in recently, causing a loss of between \$1000 and

\$2000. The foundation of the tippie sank 30 ft., the tippie collapsed and the shaker house was thrown out of plumb. The shaft had just been retimbered, the work requiring three weeks. The cave-in was caused by the removal of dirt around the timbers and the heavy rains. The shaft may have to be rebuilt entirely. Nobody was hurt, but it will be several weeks before work can be resumed at the mine.

Millstadt—A contract is about to be closed for the removal of 100,000 carloads of earth from the Northern Coal Co.'s Fischer strip-mine near here and used in the construction of part of the East St. Louis levee. Since the Northern Coal Co. began operating the strip-mine the dirt removed from the top of the coal vein has accumulated until it is a miniature mountain. Three steam shovels are to be used in loading it and six extra trains on the Mobile & Ohio R.R. will carry it to the levee. When the accumulated dirt is removed the steam shovels will uncover a further area of coal and load the cars at a single operation.

IOWA

Des Moines—The Maple Block Coal Co. has opened a new mine at the outskirts of the city. The shaft is 140 ft. deep and 200 men are employed. The daily output will be about 700 tons. The vein is from 3½ to 4½ ft. thick. John Schuler is president of the company.

OKLAHOMA

McAlester—About 150 coal miners at Savanna have been reemployed, and the output of the McAlester coalfield increased approximately 400 tons per day by reason of an agreement concluded between the Savanna mine and the Savanna Mining Co. The latter firm takes over the operation of the Savanna property which formerly belonged to the Dow Coal Co. which went into bankruptcy last February.

WASHINGTON

Spokane—Anthracite coal, of good quality, and in quantities to make it of interest to the commerce of the Pacific Northwest, has been found on patented claims in Whatcom County, owned by Alexander Polson, of Hoquiam. Mining engineers have made an investigation for Mr. Polson, and it is reported that 3,000,000 tons are already blocked out by these experts. Furthermore, it is stated that this 3,000,000 tons is but a small fraction of the total deposit.

FOREIGN NEWS

London, England—It is reported unofficially that the main demands of the Welch coal miners for higher wages has been granted by Walter Runciman, president of the Board of Trade, with whom representatives of the mine workers have been conferring.

PERSONALS

J. O. Hobby was appointed treasurer of the American Locomotive Co. at a recent meeting of the directors of that firm.

E. C. Lee has been made an inspector of coal mines for the associated insurance companies with main office in Pittsburgh, Penn.

J. J. Strickler, of Lansford, Penn., employed by the Lehigh Coal & Navigation Co. as a foreman, has announced himself as a candidate for the office of mine inspector of Carbon County.

Juan Garcia, 51 years of age, is the oldest employee in point of service on the payroll of the Colorado Fuel & Iron Co. in Colorado. Garcia works at Rouse and has been employed continuously at that camp since 1885.

H. C. Campbell, for 10 years in charge of the mines of the Central Coal & Coke Co., of Kansas City, Mo., has resigned. Mr. Campbell was recently elected president of the Campbell Glass & Paint Co., the interests of which firm demanded his entire time.

James M. Page, of Strong, Colo., superintendent of the Sunnyside Coal Mining Co., recently made an inspection trip through the Routt County coalfields, paying particular attention to equipment and methods of preparation of coal throughout that section.

H. H. Henderson has been placed in charge of the Pittsburgh office just opened by the Goulds Manufacturing Co. in the Oliver Building of that city. Mr. Henderson has been

representing the company in northern West Virginia and southeastern Ohio. E. C. Wayne has been appointed assistant manager.

W. J. Hamilton has retired from the William J. Hamilton Co., a concern which he established several years ago, and which is located in the Schultz Building, Columbus, Ohio. He will continue in the coal jobbing business and is organizing the W. J. Hamilton Coal & Coke Co., and will have offices in the Columbia Building.

R. E. Hall, former manager of the Boston office of the Goulds Manufacturing Co., and W. E. Dickey, formerly of the New York office, and both vice-presidents of the company, have taken charge of the sales organization of the firm. Mr. Hall is now located at Seneca Falls, the home office of the firm, while Mr. Dickey has charge of all business in southern Southwestern and Southern Pacific states.

George M. Carpenter, formerly fuel inspector for the Nashville, Chattanooga & St. Louis Ry., now connected with the Clinchfield Fuel Co., of Spartanburg, S. C., will make the trip as representative of his company with the 5000 tons of coal which is to go as the first shipment on the contract his company has with the Buenos Aires & Pacific Ry. While in South America he will investigate conditions in an effort to find a market for American coal.

OBITUARY

John L. Phillips, aged 47, for several years mechanical engineer for the Mount Morgan Coal Co., was found dead in bed at Williamsburg, Ky., recently. He had been a sufferer from heart disease. His mother and sister survive.

John C. M. Day, widely known as a coal, timber and railroad man of eastern Kentucky, died recently at his home in Winchester, Ky., following a long illness of Bright's disease. For several years, until his health failed, Mr. Day was president of the Mountain Central R.R. and was also interested in numerous coal and timber projects in the eastern Kentucky field. Mr. Day was born in Breathitt County in 1859. He is survived by his wife and four children.

RECENT COAL AND COKE PATENTS

Grate Bar. E. C. Clark, Nutley, N. J. 1,145,349, July 6, 1915. Filed Oct. 10, 1912. Serial No. 724,907.

Grate Bar. C. W. Hopes, Glen Falls, N. Y., 1,140,158, May 18, 1915. Filed July 21, 1914. Serial No. 852,176.

Coal Cleaner. J. R. Montgomery, Frankfort, Kan., 1,140,999, May 25, 1915. Filed May 25, 1914. Serial No. 840,807.

Fuel Feeding Apparatus. G. L. Swift, Chicago, Ill. 1,140,207, May 25, 1915. Filed June 16, 1910. Serial No. 567,149.

Furnace Fire Grate. J. Carew, Liverpool, Eng. 1,147,605, July 20, 1915. Filed June 12, 1913. Serial No. 773,306.

Coal Jigging Plant. Christian Simon, Essen-Ruhr, Germany, 1,144,735, June 29, 1915. Filed Apr. 17, 1914. Serial No. 832,627.

Gas Producing Furnace. F. C. Hamilton, Kansas City, Mo. 1,145,892, July 13, 1915. Filed Apr. 26, 1913. Serial No. 763,734.

Steam Boiler Furnace. I. C. Dakin, West Newton, Penn. 1,147,216, July 20, 1915. Filed Apr. 7, 1914. Serial No. 830,197.

Tunneling Machine. W. W. Giggey, Nederland, Colorado, 1,140,673, May 25, 1915. Filed Mar. 13, 1912. Serial No. 683,520.

Combustion of Fuel. P. O. Perkins, Salt Lake City, Utah. 1,146,732, July 13, 1915. Filed May 6, 1915. Serial No. 26,222.

Mining Machine. J. E. Flexner and E. O'Toole, Gary, W. Va., 1,143,897, June 22, 1915. Filed July 8, 1912. Serial No. 708,122.

Electric Motor Driven Coal Cutter. R. Martin, Irvington, N. J. 1,145,331, July 6, 1915. Filed Jan. 27, 1912. Serial No. 673,927.

Smoke Consumer. G. O'Neill, Moncton, New Brunswick, Canada. 1,145,504, July 6, 1915. Filed Jan. 18, 1915. Serial No. 2870.

Process for Burning Powdered Fuel. H. L. Doherty, New York, N. Y. 1,145,356, July 6, 1915. Filed Dec. 31, 1909. Serial No. 535,844.

Device for Detecting Incomplete Combustion. A. E. Carr, Liverpool, Eng. 1,143,889, June 22, 1915. Filed Mar. 13, 1913. Serial No. 753,928.

Coke Oven. F. Peiter, assignor to Gas Machinery Co., Cleveland, Ohio. 1,146,442, July 13, 1915. Filed Feb. 24, 1913. Serial No. 750,228.

Electrically Operated Mine Door. W. W. Murray and J. F. Dillon, Dearing, W. Va. 1,145,787, July 6, 1915. Filed July 31, 1914. Serial No. 854,294.

Elevation Adjusting Means for Chain Grates. H. A. Poppenhusen, Hammond, Ind. 1,144,502, June 29, 1915. Filed Jan. 22, 1915. Serial No. 3695.

Process for Converting Fine Coal Into a Marketable Fuel. J. Evans, Melbourne, Australia, 1,140,735, May 25, 1915. Filed Aug. 14, 1913. Serial No. 784,718.

Method of Operating Gas Producers. H. Koppers, assignor to H. Koppers Co., Chicago, Ill. 1,146,627, July 13, 1915. Filed July 27, 1914. Serial No. 853,349.

Bit Holder for Mining Machines. N. D. Levin, assignor to Jeffrey Mfg. Co., Columbus, Ohio, 1,140,173, May 18, 1915. Filed Jan. 8, 1909. Serial No. 471,298.

Apparatus for Manufacturing Coal Gas. H. Bruce, assignor to Bartlett-Hayward Co., Baltimore, Md. 1,144,977, June 29, 1915. Filed Jan. 7, 1914. Serial No. 810,723.

Boiler Flue Cleaner System. F. W. Linaker, assignor to Vulcan Soot Cleaner Co., Pittsburgh, Penn. 1,144,553, June 29, 1915. Filed Mar. 8, 1915. Serial No. 12,793.

INDUSTRIAL NEWS

Pittsburgh, Penn.—The Pennsylvania coal dock at Wana-tah, Ind., has been placed in service, although the work of construction is still in progress and it will be some time before the dock will be completed.

Fairmont, W. Va.—The Consolidation Coal Co. recently closed a contract with the Egyptian Rys. for the delivery of 60,000 tons of coal in the near future. This company is now preparing to load approximately 140,000 tons of fuel on vessels either in port or expected to dock shortly.

Bluefield, W. Va.—Two electric locomotives recently brought a train of 70 cars containing something over 5000 tons of coal, to this city. This is believed to be the largest train ever brought in by electric locomotives. The previous record for number of cars was 68. Trains containing 65 cars are a common occurrence.

Cleveland, Ohio—It is stated that every railroad entering Cleveland is now storing coal in large quantities or making preparations to store it, in anticipation of a possible coal shortage this winter and the coming spring. This action follows that of the Pennsylvania Lines which have been storing considerable quantities of coal in Pennsylvania.

Pittsburgh, Penn.—The Distribution Branch of the United States Immigration Service recently received a call from the Quemahoning Coal Co., Somerset County, Penn., for 200 coal miners. The New River Association, which operates mines in Fayette County, W. Va., also asked for 300 men. This is regarded as an indication of the improvement in industrial conditions in the above-named districts.

Washington, D. C.—The Interstate Commerce Commission has allowed the increase of 25c. per gross ton in anthracite coal rates from Pennsylvania to Chicago, and other Illinois points covered by the Chicago rates; also to St. Louis and points in the same district. The tonnage affected is about 2,500,000 tons annually, and the principal railroads to benefit are the Erie, Lackawanna and Lehigh Valley.

Steubenville, Ohio—The directors of the LaBelle Iron & Steel Co. have awarded to the H. Koppers Co., of Youngstown, Ohio, a contract for the construction of a byproduct coking plant of 96 ovens, which will cost about \$2,000,000. The plant will be constructed on the West Virginia side of the Ohio River, opposite the company's plant on the Ohio side, and will be connected with the present plant by a bridge.

Hazard, Ky.—The Buffalo Creek Branch of the Lexington & Eastern R.R. from Lothair 5 miles up Buffalo Creek, and the First Creek Branch into new coal fields surrounding Hazard are nearing completion. Both will open extensive new coal fields where a number of operating companies are at work getting into readiness to begin shipping coal. It is expected that both branches will be completed within 30 days.

Des Moines, Iowa—Three suits have been started in the Polk County district courts to test the validity of the new workmen's compensation law. The latest is Charles Severline against the Economy Coal Co., in which the plaintiff claims \$625 for injuries. The plaintiff was not under the compensation act at the time of the accident. The law removes "common law" defenses such as contributory negligence,

assumption of risk and fellow-servant rule, whenever an employer fails to come under its provisions. In the cases now on the docket the coal companies will attempt to have this part of the statute declared invalid.

New Orleans, La.—Coal will shortly be brought from the Pennsylvania, West Virginia, Alabama, and other fields, in barges and boats to New Orleans. It is estimated that the increase in rates on coal granted the railroads from these fields will mean \$150,000 a year added expenditure for consumers here. A company is in formation to transport the coal in barges to this port, by way of the Mississippi, Ohio and other rivers.

Columbus, Ohio—The supreme court of Ohio will be asked to enjoin the examination of the books of the Hocking Valley R.R. by the Sunday Creek Coal Co. experts, who were appointed as special employees of the state by the Utilities Commission. A motion has been filed that the Commission vacate its order directing these experts to make the examination. The objection made is that the experts appointed to act for the state are not disinterested.

Cincinnati, Ohio—It is reported that during the recent past, the Pennsylvania R.R. has put into commission every available engine and car along its lines. This has been due to the heavy orders for coal transportation from the mines to the eastern seaboard. It is said that within the recent past more than 1,400,000 tons of coal has been contracted for by coal mining companies in western Pennsylvania for France, Italy, Spain, Portugal and Egypt.

Washington, D. C.—The coal-carrying railroads which are affected by the decision of the Interstate Commerce Commission reducing the freight rates for the transportation of anthracite, are expected to decide shortly as to the course of action to be pursued with the view of contesting the findings of the commission. It has been estimated that the nine coal-carrying roads will lose approximately \$8,000,000 per year in earnings under the new rates which become effective Oct. 1 next.

Chicago, Ill.—The Illinois properties of the Dering Coal Co. at Westville and West Frankfort, have been sold under foreclosure to the Producers Coal Co., of which F. S. Peabody is president. The transfer of these properties has already been made. No disposition has yet been made of the Indiana holdings of the Dering Coal Co. Mr. Peabody will have entire charge of the management of the new company, and is negotiating with J. K. Dering of the J. K. Dering Coal Co., to continue handling the product of these mines.

Pottsville, Penn.—A section of one of the first, if not the first, railroads in the United States was unearthed on Aug. 21, by Foreman Nelson Clayton, of the Pottsville Water Co., who had a gang of men excavating in Coal St. It is a narrow-gauge railroad, and was originally used to bring coal to the Schuylkill Canal, when that waterway ran into the heart of Pottsville. Now the old canal is filled with coal dirt and culm for a distance of 25 miles from here. It is said the railroad was laid prior to 1830. The rails and sills are in an excellent state of preservation.

Philadelphia, Penn.—It is reported that shipping men and freight brokers of Philadelphia have received inquiries for shipment of cargoes of coal to Liverpool, England. For some time past, England has been unable to supply coal to her allies, and the price of coal abroad has risen in some instances to as high as \$27 a ton. Inquiries from England itself are a surprise here although it has been known for some time that the output of English mines has been decreased decidedly on account of the enlistment of miners and because of labor troubles.

Baltimore, Md.—Suit has been entered in the U. S. district court at Baltimore by the Consolidation Coal Co., in which it seeks to recover \$105,000 damages from the Munson Steamship line, a New York corporation, for alleged breach of contract to transport 12 cargoes of coal from Baltimore to ports in Italy. The European war and the attendant dangers to trans-Atlantic vessels, occasioning a shortage in the number of available freighters, is believed to have caused the alleged breach. Since Apr. 1, it is asserted, the defendants have failed to comply with their agreement to transport one cargo monthly.

Shoshoni, Wyo.—It was reported here recently that H. O. Barber, general manager for the Poposa Coal Co. at Hudson, has offered to build a grade from Shoshoni to the Shot Gun coal fields, providing the Northwestern R.R. would lay the steel for a railroad to that point. The Shot Gun fields lie about 43 miles west from this point and are said to contain the best coal in the state. In this field there are five or six out-croppings, which show for a distance of about three miles. These veins run from 4 to 26 ft. in thickness and the indications are that these veins eventually combine in one large vein.

Coal Trade Reviews

General Review

Full winter schedule on anthracite now at hand and business will slow down pending cooler weather. Indications of a stiffening in bituminous. Foreign inquiries from Great Britain. Retail buying gaining momentum at interior points.

Anthracite—Buying showed the customary month-end spurt, and it is noted that more inquiries are appearing as the season advances. The movement continues slow, however, and with the full winter's schedule now in effect, it will require some evidence of winter weather to inject any activity into the market. The domestic grades are in plentiful supply and are inclined to heaviness but the steam sizes are fairly strong although any demand for these is easily met. The unusually attractive terms offered retailers, as regards credit and prices during the summer, has resulted in heavier stocking than is usually the case. The strong position of the independent operators, as indicated by the increased price cutting is causing no little concern.

Eastern Bituminous—The large export trade and rigid curtailment in mining operations are tending to keep supplies down to a healthy basis with the result that prices are fairly well maintained in spite of the fact that the maximum dullness of the season is apparently at hand. The request for bids from a large Eastern railway system and from the Panama Canal R.R. are two important inquiries now pending. Some observers see a slight but well defined stiffening in the demand for coal which is being reflected in the firmer attitude operators are taking as regards prices for future delivery. There is hardly any doubt that industrial conditions are picking up slightly but operators are still actively canvassing for business, and minimum prices are the rule.

Export Trade—Many of the foreign inquiries on which negotiations have been in progress for some time, have been closed. In addition to this bunkering trade is showing a substantial increase, vessels now usually taking all the possible tonnage at this end because of the uncertainty as to obtaining supplies abroad. A feature of interest in export circles during the week was the receipt of several inquiries for shipment to England. The heavy movement to Italian ports still continues and some large cargoes have gone to South American points also. Vessel rates in the off-shore trade are slightly stronger, particularly to Italy, and with grain shipments soon to be competing for tonnage, the indications point to a still further advance.

Lake Markets—The situation in the Pittsburgh district is distinctly better. The railroads are taking slightly larger tonnages and the effect of the long continued improvement in the steel industry is at last beginning to be noticed. The demand is chiefly against contracts. The heavy rains in Ohio have had an adverse effect on the market although the general tone is slightly better. Retail buying continues light in spite of the advancing season and it is thought that this will cause an unusual rush for coal later to make up the deficiency. A great many companies are still obtaining their current requirements in the spot market but a moderate tightening of the situation will force them to contract. There is no improvement in the Lake movement which is proving a decided disappointment. In the Southern market the cotton mills are reported to be doing considerable buying which has stimulated some activity in that direction.

Middle West—Retail buying is gradually obtaining momentum as the season advances, and there is perhaps a slight improvement in the steam market, though not of important proportions. It is not believed that much further improvement can occur until some cool weather forces consumers into the market. The outlook in the Lake trade continues as discouraging as ever, but some favorable signs are noted in general industrial conditions. The enormous crops are having a decidedly beneficial effect on sentiment and some of the larger railroad systems are reported to be stocking up against a possible stringency in the market this fall.

A Year Ago—Heavy rail shipments in anthracite and business is moderately active already. Eastern bituminous situation still improving. Orders on shipments for foreign markets are being reported. Trade slowing expanding and will be active shortly. Lake shipping better.

BUSINESS OPINIONS

Boston News Bureau—It is certainly a most remarkable situation. The quickness with which the security market came back on request of the German ambassador that this country withhold action on the "Arabic" case until the German government has forwarded an explanation shows the sensitiveness of the situation. But the fact is that we as a people are growing immensely rich as a result of the foreign war. General trade, to be sure, is still chiefly confined to war orders, but the buying power is increasing enormously. Gradually the idea is permeating the country that the prosperity that is coming to us cannot be downed. There is more confidence appearing, therefore, in every quarter. With the harvests of the immense crops, now practically assured, our wealth will be prodigious, and this must find vent in new business enterprises and must naturally increase the investment ability.

Iron Age—That the Steel Corporation would buy pig iron has been persistently reported, but it is stated on the highest authority that it will not. It has seven Northern furnaces of modern calibre that can yet be put in, and the furnaces now active, 90% of the total capacity, are making larger outputs than ever. A Pittsburgh steel company has just bought 25,000 tons of basic iron for this year. Rails cannot now be had for early delivery. In the past week 30,000 tons were placed, of which 15,000 tons, which goes to Alabama, cannot be delivered before October. At Chicago a Western road has bought 11,000 tons of tie plates, and the price there has advanced from \$27 to \$28.

American Wood and Cotton Reporter—Scoured wools have been a feature of the wool market for the last week, including especially Australians. The large foreign orders have created a demand for these wools. Territory wools have been sold in large quantities, particularly Montana wools. The market is still very strong. In the woolen and worsted goods market the situation is very interesting, with the outlook continually becoming brighter for woolen goods producers.

Raleigh Coal & Coke Co.—Speaking strictly for ourselves, we consider that we are warranted in buying and stocking larger quantities and wider variety of materials than heretofore. More than 50% of our business associates are optimists.

Dun—International monetary complications and disturbances in the ranks of labor constitute the chief elements of uncertainty in the general situation. There is, however, nothing either unsound or disquieting in strictly domestic finance, and though further controversies between employers and wage earners have arisen, serious and protracted troubles have thus far been averted.

Bradstreet—Trade continues to broaden, industry to quicken and optimism to spread, without, however, diminishing conservatism or allowing sight to be lost of the unsettled aspect of international political matters. Orders given by visiting merchants are responsible for expansion in house trade, which might be greater were it not for cool, wet weather in the West and the belated movement of grain to market. Cereal crops, on the whole, promise excellent yields, prospects in the Northwest being particularly propitious.

The Southern Lumberman—With statistics compiled by the Southern Pine Association showing that yellow pine manufacturers have unfilled orders on hand for over 16,000 cars and that a net reduction in stocks on hand at mills in that association amounted to 3% in July, the optimistic tone to the yellow pine business that became manifest about the middle of July not only continues, but has been considerably enhanced during the past week. Reports from both producing and distributing centers are practically unanimous that business is better. The improvement has also been reflected in the demand for hardwoods.

Marshall Field & Co.—Wholesale dry goods distribution has been lighter in volume than during the same week a year ago. Unseasonable weather continues to effect retail selling adversely.

ATLANTIC SEABOARD

BOSTON

Hampton Roads coals very dull. Railroad asks for bids on supply for part of 1916 and thereafter. Georges Creek demand light and Pennsylvania grades stagnant. Water freights quiet, with steamers now available. Discussion of anthracite possibilities tends to help trade.

Bituminous—The Pocahontas and New River market seems to have reached the apex of dullness for the season. Prices are apparently unchanged either f.o.b. or alongside Eastern points, and shipments on contract have been about normal for this season. The Boston & Maine R.R. is soliciting proposals for transportation for one year and for five years beginning Sept. 1, 1916 and Nov. 1, 1917, and for 720,000 tons of bituminous either f.o.b. loading port or alongside Boston for one year, or 3,000,000 tons for five years, beginning Apr. 1, 1917. It will be interesting to see what shippers are willing to discount the future to that extent.

There would probably be concessions in price among certain of the Pocahontas and New River coals were there any inquiry, but as it is the export trade, in conjunction with curtailed mining, is keeping down the volume of coal standing at the loading piers. Most of the shippers are doing a fair current business and at this writing are perhaps showing less anxiety over the future of the market than since the beginning of 1915.

The demand in New England for Georges Creek is very light just now. The more prominent shippers of this grade have made special efforts to interest the trade in their Pennsylvania coals and each year the tonnage of Georges Creek is likely to diminish in this territory.

Only occasional spot sales relieve the stagnation in the Pennsylvania grades. Prices continue on a minimum basis, and operators are actively canvassing for winter business. Certain of them have named prices a year ahead, subject to advances in wages and tolls.

Water Freights are still nominally 75c. Hampton Roads to Boston, on 3000 tons upward. Steamers are available at the same rate, but so far there have been no takers. Because of dispatch requirements steamers will have to accept less before they are freely chartered in competition with barges.

Anthracite—There has been some discussion of the effect of the recent 15c. reduction in tolls, but it is pretty well understood now that more than that will have to happen to make coal cost any less in New England. Whether there will be any pronounced shortage of labor during the fall and winter is a more pressing matter. There are different views on this and much will depend on how the fall trade starts.

Boston retail prices were advanced 25c. on all sizes, effective Aug. 16. This makes the present basis \$7 for broken, \$7.75 for egg and stove, \$8 for chestnut, and \$6 for pea.

Bituminous prices at wholesale are about as follows:

	Clearfields	Cambras Somersets	Georges Creek	Pocahontas New River
Mines*	\$0.85@1.40	\$1.15@1.60	\$1.67@1.77	
Philadelphia*	2.10@2.65	2.40@2.85	2.92@3.02	
New York*	2.40@2.95	2.70@3.15	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				\$2.70@2.85
Boston†				3.55@3.68
Providence†				3.45@3.68

* F.o.b. † On cars.

NEW YORK

Month-end spurt creates some activity in anthracite. Considerable interest evidenced in the labor outlook. Slight improvement in bituminous and the outlook regarded as encouraging. Bunkering and export trade active.

Anthracite—With the approach of September a slight improvement is evident in the anthracite market. Not that there is much more coal being shipped but there are more inquiries and sales are now more regular. Even if the retailers have no immediate sale for the coal they will have the boats towed to their plants and discharge as soon as it is possible.

Mining is still restricted to three or four days each week. All of the inactive sizes are going into stock and the storage plants of the various railroads are becoming so filled that capacities will soon be taxed.

The labor situation will soon begin to take definite shape. The general activity in the industry this year will benefit the companies in that they have been able to place so much fuel in stock. The miners are strengthening their forces by more thorough unionizing and Pres. John P. White of the United Mine Workers of America is reported to have promised the men that he will obtain recognition of the union and the eight-hour day if they unionized one hundred per cent.

Stove is the leading domestic size in demand with egg second. There is very little call for chestnut which is still selling at from 30 to 40c. off circular. Pea has bettered its condition moderately and is commanding slightly higher figures. Buckwheat is still long. Rice and barley of the better grades continue in fair demand with loading delayed from two to three days.

The average quotations of the week follow:

	Lower Ports		Upper Ports	
	Circular	Individual	Circular	Individual
Broken.....	\$4.95		\$5.00	
Egg.....	5.20@4.70	\$4.90@5.20	5.25	\$5.00@5.25
Stove.....	5.20	4.90@5.20	5.25	5.00@5.25
Chestnut.....	5.45	5.00@5.45	5.50	5.10@5.50
Pea.....	3.50	3.00@3.15	3.50	2.75@3.00
Buckwheat.....	2.75	2.00@2.25	2.80	2.10@2.35
Rice.....	2.25	1.70@1.85	2.30	1.90@2.10
Barley.....	1.75	1.45@1.70	1.80	1.65@1.80

Bituminous—There is a slight improvement over last week and sales agents are more cheerful. The usual contract tonnage is moving uniformly with mining being restricted to that amount; consequently there is little spot coal and there are not so many bargains to be picked up as was possible a fortnight ago. A few sales of West Virginia coals have been reported during the week at sacrifices. As many of the manufacturing plants along the Sound and throughout southern New England are making extensive additions the prospect for increased tonnage to these establishments seems good. The holders of the present contracts will no doubt have the first call on the new business but price counts and keen competition is bound to occur.

The bunkering tonnage increased this week as the number of steamers in the harbor was greater than at any time since early in the month. Then too, vessels must take on all coal possible owing to the uncertainty of being able to replenish their supplies abroad. The export business continues to gain strength. Inquiries made last month are rounding into actual business and some large orders have been placed with the leading operators.

Current quotations are on the following basis:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein.	\$3.20@3.30	\$3.20@3.30	\$3.20@3.30	\$1.75@1.85
Georges Creek Tyson....	2.90@3.00	2.90@3.00	2.90@3.00	1.35@1.45
Clearfield:				
Medium.....	2.65@2.80	2.55@2.65		1.10@1.25
Ordinary.....	2.55@2.60	2.55@2.60		1.00@1.10
Broad Top Mountain.....				1.10@1.45
Cambria County:				
South Forks.....	2.90@3.05			1.35@1.50
Nanty Glo.....	2.75@2.80			1.20@1.25
Barnesboro.....	2.65@2.70			1.10@1.15
Somerset County:				
Quemahoning.....		2.70@2.85	2.70@2.85	1.20@1.30
Medium.....	2.65@2.70	2.60@2.65	2.60@2.65	1.10@1.15
Latrobe.....	2.45@2.55			.90@1.00
Greensburg.....	2.75@2.80			1.10@1.15
Westmoreland.....	3.15@3.20			1.35@1.45
West Virginia Fairmont ½		2.60@2.70	2.60@2.70	.80@.90
Fairmont mine-run.....		2.45@2.55	2.45@2.55	.75@.85
Steam.....		2.45@2.50	2.45@2.50	.90@.95
Western Maryland.....		2.40@2.45	2.40@2.45	.85@.90

PHILADELPHIA

Anthracite slightly improved, although trade continues very dull and little buying being done. Stove plentiful with egg in fair demand, while chestnut lags hopelessly. Pea weak, with other small sizes fair. Bituminous is quiet, with good future and the exports growing stronger.

Anthracite—Probably there have never before been so many coal dealers in Philadelphia away at one time as there has been no one with authority to buy coal. However, despite this condition it is at least possible to report a slight improvement, due in part to a few regular dealers who buy a little toward the end of the month to save the 10c. advance.

Stove is considerably more plentiful, and it is barely possible that the unsettled condition in the tidewater freight rates has had an effect. Egg is still in fair demand, especially since the New England market continues to take quite a tonnage of this size. Chestnut lags hopelessly, as it has for some time, and pea has not stiffened any. Several fair sales of this latter size are reported at \$1.60, with an adjustment of 10c. a ton to equalize the freight rate. The other steam sizes are fairly strong, but the demand is easily met, even with the collieries on reduced time, besides which there are several idle washeries that could be worked in case the call for these sizes should become greater.

Practically all dealers are apparently carrying capacity stocks. The condition of the market, from the standpoint of the retailer, has been such as to make the policy of stocking heavily a sure thing, especially since most of it has been done with the operators' capital. Owing to the large supplies on hand it is extremely difficult now to induce them to take in more coal, even if they had room for it.

However, it is only a matter of a very short time when some of this coal will begin to move.

The recent and continued price-cutting has made the large operating companies realize the growing strength of the individuals and it will not be surprising to see some unusual efforts put forth by the sales agents of the big companies early this fall. It is known that this question has been given considerable thought and consideration during the summer and it is likely that the plans will be developed in a short time, although the recent rate decision may have a tendency to modify any arrangement to this end.

The circular prices, to which should be added the Pennsylvania State tax of 2½% per ton, are as follows:

Line	Tide	Line	Tide
Broken.....	\$3.40 \$4.65	Pea.....	\$2.50 \$3.25
Base.....	3.65 4.90	Buckwheat.....	1.25 2.25
Stave.....	3.90 4.90	Rice.....	.85 1.75
Chesnut.....	4.05 5.15	Barley.....	.50 1.50

Bituminous—While the trade is still quiet there are indications that an increased demand will soon be in evidence. Additional furnaces and steel plants are going into operation and increased time is noted at other plants. The trade was quite surprised at inquiries being received from England the past week and these together with the continued requests from other foreign lands is keeping the export business brisk, with prices good and showing indications of doing better.

In the domestic trade there has been no change in prices but with a labor shortage becoming more apparent weekly many of the small operators are inclined to accept business at a reduced price rather than have their operations shut down and their force scattered. Formerly in time of need the operators could send a representative to meet incoming immigrant ships and secure all the labor needed, but all of this is now changed. Slack coal still continues in active demand, but without any perceptible change in price.

The ruling prices are:

Georges Creek Big Vein..	\$1.65@1.75	Fairmont gas, mine-run..	\$1.15@1.25
South Fork Miller Vein..	1.50@1.60	Fairmont gas, slack.....	.70@.80
Clearfield (ordinary).....	1.00@1.20	Fairmont lump, ordinary..	.85@.95
Somerset (ordinary).....	1.00@1.15	Fairmont mine-run.....	.75@.80
West Va. Freeport.....	.85@.95	Fairmont slack.....	.55@.65

BALTIMORE

Trade slowly stiffening. Fall outlook most encouraging. Orders increasing. Car shortage more evident, and lack of labor being felt.

Many buyers are now feeling out for more coal. Mine operators are showing less inclination to sell at recent prices, at least in any quantity. Low grade coals of West Virginia and Western Maryland go at less than 80 and 85c. now, while the more ordinary products of Pennsylvania are holding at from 90 to 95c.

Reports of a car shortage are coming in. A number of operations along both the Pennsylvania and Baltimore & Ohio reported not more than 20 to 50 per cent. of their appropriation delivered during the week. With the demand on contract now coming closer to normal and new business developing, some embarrassment was occasioned. Growing scarcity of labor is worrying many operators, also. Thousands of miners have returned to the old countries, while others have been drawn to more lucrative lopes. The labor situation is likely to be an important factor this fall and winter.

Export business, which suffered a relapse the second week of the current month, picked up again the past week, when a total of 52,194 tons was loaded here for foreign ports. With the large number of charters announced recently it is expected that this business will more than hold its own.

HAMPTON ROADS

Week's movement shows up well. Prices unchanged on standard grades. Foreign demand continues heavy. Occasional shortages of coal.

During the week all of the piers have been well supplied with vessel tonnage which has been taken care of promptly. In the case of the Chesapeake & Ohio Ry. at Newport News they have been compelled to put into operation again their old wooden pier No. 12 where considerable barge and schooner tonnage has been taken care of.

In addition to the export movement to Italian ports there have been some large cargoes to the South American market, while the coastwise shipments have shown up well and the government has also taken some cargoes. The American steamer "Newton," which has heretofore been in the Eastern coastwise trade, loaded a cargo of about 7000 tons for the government for delivery at San Francisco.

Although the quantity of coal on hand appears somewhat excessive it is noted that a number of the larger shippers are having considerable difficulty keeping sufficient coal at Tidewater to take care of vessel tonnage as fast as it arrives.

The demand for coal for prompt movement foreign is still holding up well with every indication of continuing so. Prices are practically unchanged on the standard grades of mine-run coal.

The outlook is bright for record dumpings by the Chesapeake & Ohio Ry. during the month of August, while those for the Virginian Ry. will also be heavy but it is difficult at this time to make an estimate on the Norfolk & Western figures although it is not believed that this road will go above its July dumpings.

Railroad Tonnages—Dumpings over the local piers for the past several weeks compare as follows:

Railroad	Week Ending				
	July 24	July 31	Aug. 7	Aug. 14	Aug. 21
Norfolk & Western....	197,913	188,593	135,357	171,252	.....
Chesapeake & Ohio....	96,627	84,018	110,561	83,390	129,826
Virginian.....	86,523	33,335	64,397	63,066	77,136
Totals.....	381,063	311,949	310,515	317,708	206,962

OCEAN FREIGHTS

A number of steamers to load coal for South American, Mediterranean and West Indian ports have been chartered during the past week; freight rates to these destinations are stronger than a week ago, especially to West Italy. The grain competition is increasing and the general impression is that rates on coal will advance rather than decline.

The freight market is now quotable as follows:

To	Rate	To	Rate
Havana.....	\$2 75@3 25	Bermuda.....	\$3.00
Cardenas or Sagua.....	3.00@3.50	Vera Cruz.....	3.25@3.75
Cienfuegos.....	3.25@3.50	Tampico.....	3.25@3.75
Port au Spain, Trinidad.	3.50	Rio.....	8.28@8.40
St. Lucia.....	3.25@3.50	Santos*.....	8.40@8.64
St. Thomas.....	3.00	Montevideo.....	8.04
Barbados.....	3.50	Buenos Aires or La Plata	8.04@8.16
Kingston.....	3.00@3.50	Rosario.....	8.40
Curacao.....	3.25	West Coast of Italy.....	9.84@10.08
Santiago.....	3.25@3.50	Barcelona**.....	8.66@9.00
Guantanamo.....	3.25@3.50	Valparaiso or Callao.....	7.00
Demerara.....	4.50@5.00	Marseilles.....	9.00@9.24

Note—Rates noted in bold face type are only approximate.
* Consignees paying dockage dues. ** Spanish dues for account. † Quotations on Plate coal by British steamers; neutral steamers are more difficult to obtain and the rates are always higher.

W. W. Battie & Co.'s Coal Trade Freight Report.

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge. 24c. per net register ton per day demurrage."

OCEAN CHARTERS

The following charters have been reported from various sources during the past week:

PHILADELPHIA			VIRGINIA		
Vessel	To	Tons Rate	Vessel	To	Tons Rate
Petra	Port Limon	1292	Unita	River Plate	2344 8.04
Stormount	Antilla	1231	Teespool	Rio Janeiro	2938 8.25
Catherine	St. John	196 1.90	Embricos	River Plate	2670 8.16
May V. Neville	Porto Rico	1043	Iolo	River Plate	2502 8.10
	BALTIMORE		North Pacific	River Plate	2493 8.10
Alf	River Plate	1970 8.16	Othon		
Gretaston	Barcelona	2178	Stathatos	River Plate	1957 8.10
Harfete	Spezia	3021	Cyfarthia	Santos	1959 8.40
Claveresk	Felton Cuba	2441	Jata Mendi	Italy	2746 9.96
Bayard Hopkins	Venusuela	212		ATLANTIC RANGE	
Coila	Piraeus		Buxton	Italy	2027 9.48
Newstead	Chipara		Oakland		
Polarstjernen	Gothenburg	2199	Granfie	Marseilles	2927 8.88
Hellenic	Sweden	2667	A. J. Sterling	Moncton	148 1.90
Liouria	Italy	1958	M. A. Belliveau	Yarmouth	199 1.65
Silvia	Savona	2306		Note —Steamers are indicated by bold face type, all others being schooners.	
Allanton	Taranto	2775			

VESSEL CLEARANCES

The following steamers have cleared from Hampton Roads Aug. 13 to Aug. 20.

NORFOLK			NEWPORT NEWS		
Vessel	Destination	Tons	Vessel	Destination	Tons
Br. S. S. Boyne ¹	Rio de Janeiro	6029	Br. Lady Plymo'th	Taranto	6000
Br. Stormount ²	Havana	.....	It. Tea	Genoa	7200
It. Eliopoli	Genoa	5520	Am. Kanawha	Port au Spain	2956
Nor. Ocland	Canal Zone	4700	Grk. Tsiropinas	Palermo	4500
Br. Kintail	St. Vincent, C.	.....	Br. Penlee	.....	5500
	V. I.	5418	Br. Jersey City	Italian Port	7000
Nor. Ydun	Kingston	1800	Br. Fairmount	.....	2600
Nor. Antares	Vera Cruz	.....		BALTIMORE	
Br. Lexie	Montevideo	5234	Castlemoor	Egypt	4999
Grk. E. S. Embricos	Buenos Aires	6242	Luigi	Italy	4659
It. Phoebus	Elba	4500	Rio Preto	Brazil	5142
It. Attualita	Maddalena	6928	Camilla	Panama	3123
Br. Nailsea Court	Buenos Aires	4613	Calimeris	Italy	5602
It. Italia	Civita Vecchia	4233	Harfete	Italy	6500
It. Luzon	Genoa	5602	Roker	Egypt	5300
Am. Sch. Gen'l			Polarstjernen	Sweden	5100
E. S. Greeley	Pernambuco	1838	Gretaston	Spain	5069
Br. S. S. Don Arturo	Buenos Aires	4948	Alf	Argentina	1300
Nor. Taunton	Kingston	1368	Enterpe	France	5400
			¹ Crozer - Pocahontas Coal Co.		
			² New River Coal Co.		

LAKE MARKETS

PITTSBURGH

Market decidedly improved, with heavy line demand, and operations up to fully 60% of capacity. Free coal stronger and contract coal higher.

A much more cheerful tone pervades the Pittsburgh coal market. With the continued improvement in steel mill operations as well as some improvement at foundry and machine shops, the line demand is fully up to normal. The railroads are taking slightly increased quantities of coal. Lake shipments are as poor as formerly, and nothing better is now expected of the Lake trade than perhaps a slight spurt toward the close of the season.

The increased demand for coal is chiefly against contracts and the market for free coal has not improved materially, though prices lately quoted in these reports are now being adhered to very strictly. For contract coal the market is definitely stronger, there being practically no sellers at less than \$1.15 for mine-run to Apr. 1, representing a total advance of fully 10c. per ton in the past 60 days in the case of contract.

Coal output has increased slightly in the past fortnight, and it is conservatively estimated that the Pittsburgh district is now operating at fully 60% of its capacity, some estimates being considerably higher than this.

The market for free coal is strong at the following figures: Slack, 50@60c.; nut and slack, 90@95c.; nut, 95c.@\$1; mine-run, \$1.10@1.15; 1/4-in., \$1.10@1.15; 1/2-in., \$1.20@1.25, per net ton at mine, Pittsburgh district. On contracts to Apr. 1 the market is firm as follows: Slack, 85@95c.; mine-run, \$1.15; 1/4-in., \$1.25; 1/2-in., \$1.35.

BUFFALO

Still a small improvement in bituminous, just enough to make the dealers anxious. One encouraging point is in better railroad activity. No increase in Canadian demand. Anthracite still quiet.

Bituminous—The movement increases week by week, but the volume is not yet very large. A good many business men are away for the summer which is delaying buying; they will buy coal when they return if the general conditions still improve and if not they will wait. There is complaint here and there of dullness but a quiet trade is the best, for it does not stimulate production unduly.

There is more buying on the part of the railroads than there was and this is expected to continue for some time; the roads have not had much of a supply for a long time and they will need more if they are to move the fall crops. Some of them are also anticipating labor troubles in the spring, though this is too early to buy for anything of that sort.

There is much report of the Canadian trade just going to settle down to a normal activity, but so far it has failed to do so. As it looks now the Canadian trade is not going to be of much consequence for the time being at least. The wheat crop there is large, but it is not stimulating business. There is not much coal on track here at present. Some of the worst delinquents in that line are reporting that their coal is all sold before it reaches here. Quotations remain on the basis of \$2.70 for best Pittsburgh lump, \$2.55 for three-quarter, \$2.45 for mine-run and \$2.25 for slack.

Anthracite—The consumer is not ready to buy yet. All reports agree that there is much less coal in the home bins than usual, but the consumer has an idea that he can get his supply the same day he orders it, even if he waits till late fall. Shippers anticipate a clamor then that has not been equaled lately. The mines have not increased their running schedules and will not do so till there is more buying. If the demand then exceeds the supplies there will have to be a large increase of storage capacity provided on the Upper-Lake docks.

The rail lines are not moving much coal and the lake docks are not as active as they were a year ago, which means that there will be a shortage when the season closes, in spite of the congestion at storage centers. Lake shipments for the week were 112,500 tons.

COLUMBUS

Fairly good demand for steam grades and prices well maintained. Domestic trade slow, due to the excessive rains. The tone of the market is only fair and future prospects are not bright.

The domestic demand has been rather sluggish in Columbus and central Ohio territory during the past week. The heavy rains have affected the trade both in cities and rural districts. Buying on the part of dealers is restricted because of fair

stocks and they are loath to invest any more than is necessary. Rains in the country have prevented farmers from hauling their winter's supply of fuel. Threshing has been long drawn out and the amount of coal required is not as large as formerly. Retail trade is slow, though prices are well maintained.

Steam business is better as manufacturing appears to be on the up grade. Munitions factories especially are active and a considerable amount of coal is required to keep them running. As a result of the better demand contracts are being looked after more closely and there is not so much cheap fuel offered on the open market. Strength is shown in the small sizes as there is still a better demand than can be supplied by Ohio operators.

Lake trade is slow and not much improvement is expected for the time being. The docks of the upper lake ports are still congested and the movement to the interior is slow. A large part of the tonnage going to the Northwest is from West Virginia mines.

There is still a good demand for anthracite in Columbus territory; the consumption is much larger than usual. Coke trade is also showing some signs of increased activity.

Prices in Ohio fields are as follows:

	Hocking	Pomeroy	Kanawha	Eastern Ohio
Rescreened lump.....	\$1.45	\$1.50		
Inch and a quarter.....	1.35	1.35	\$1.30	\$1.25
Three-quarter inch.....	1.25	1.25	1.25	
Nut.....	1.15	1.25	1.15	
Mine-run.....	1.05	1.10	1.05	1.00
Nut, pea and slack.....	.65	.65	.65	.55
Coarse slack.....	.55	.55	.55	.45

Mines have been working at about the following percentages of full capacity:

District	Week Ended				District	Week Ended			
	July 31	Aug. 7	Aug. 14	Aug. 21		July 31	Aug. 7	Aug. 14	Aug. 21
Hocking....	15	25	25	30	Cambridge..	30	30	35	35
Jackson....	20	20	20	20	Masillon....	25	25	30	50
Pomeroy....	35	25	40	40	Eastern O..	50	30	55	55
Crooksville..	20	30	30	30					
Average...						29	30	33	34

CINCINNATI

Demand poor but a car shortage has helped to strengthen prices. Heavy domestic buying is expected to begin at any time.

Slightly better prices are noted in spite of the fact that buying is very light on both sides of the market. The improved strength is due to the shortage of cars, which was reported nearly every day. The retail trade is still holding off, and the domestic market, in consequence, remains extremely dull. Inasmuch as stocks are known to be low everywhere, however, it seems certain that buying for the usual winter demand must begin soon, and this should strengthen the market very materially. At the same time, it is also probable that an increased movement of the prepared grades will weaken the steam market, on account of the increased production of screenings. The general industrial situation is not improved, and the grave danger of European complications has not helped it any.

TOLEDO

Conditions improve at Toledo considerable coal going up the Lakes. Wet weather delays buying.

The improvement noted here for several weeks is holding. Hard coal is moving a little better and domestic business is expected to increase shortly. Smokeless coal, including the Pocahontas variety is not holding as firm as was expected and there is some shading of prices in order to secure business. Lake shipments continue but are by no means as heavy as usual for this season of the year. Steam coal continues rather weak, although factories are beginning to run better and it is expected that the first of the year will find many of the factories again contracting.

CLEVELAND

The market has been dragging for more than a week. Stocks large. Lake business begins to show signs of improvement.

All last week there was an excessive supply at this port, companies that have not paid car service for several weeks were caught last week. With 400 cars at the opening of last week the market was not cleaned up by Saturday night and 300 cars arrived over Sunday. Monday night about 50 cars of coal were on track unsold. Prices were maintained in spite of the large amount of spot coal, but this was due principally to the fact that there was no one to accept coal even at a cut.

The Lake business is beginning to improve. Some shippers who own boats have enough coal to load all their ships due here this week. This is unusual as none of the fleets have had a full tonnage of coal in any week since spring. All of the ships that were at dock have been fixed

out or are now being fitted out. Two ships left Lorain last week with cargoes of coal loaded last winter.

The real excitement on the lakes is the large tonnage of ore handled during the last thirty days. Not since 1907 has so much ore been offered to the ships the last half of the season. Shippers Monday sought out the ship managers to give ore contracts but few of these fleet operators can carry any more ore than is now under contract.

Though the Lake coal traffic has been dull this season, there is reason to believe it will be practically normal the rest of the year. Stocks in the Northwest are small although the upper lake docks are full. The movement to the interior is growing larger and as the dealers must stock against a miners strike next spring, there will be a larger movement to the interior than has been predicted.

Quotations for shipment to jobbers are as follows:

	Poca- hontas	Youghio- gheny	Fair- mount	Berg- holz	Ohio No. 8
Lump.....	\$3.70			\$2.30	
Lump, 6-in.....				2.30	
Lump, 1 1/2-in.....				2.10	\$2.10@2.15
Lump, 3-in.....		\$2.15@2.20	\$2.00	2.00	2.00
Egg.....	3.70			1.95	
Mine run.....	2.70	2.10@2.15	1.90	1.85	1.80@1.85
Slack.....		1.55	1.70	1.50	1.50

DETROIT

Quantity of consignment coal much reduced and the market steadier. Stocking by consumers considerably less than normal.

Local manufacturing establishments and retail yards have made little apparent effort to stock up for future requirements. Until about two weeks ago steam and domestic coal was being shipped into the local market in such quantities that large amounts of both remained on railroad tracks coming to forced sale at prices which unsettled the market in all lines. The steam users, by buying judiciously have been able to supply their requirements whenever the necessity arose at low figures. The quantity of consignment coal arriving is not excessive now and a steadier trend has developed in prices. The steam coal users are now buying in small lots, evidently hopeful that new opportunities will arise to get cheap coal. Shippers find encouragement, however in the fact that the small orders are numerous.

Neither domestic sizes nor anthracite are being bought liberally. Retail dealers say their customers are doing very little in the way of putting in winter supplies and that they do not care to accumulate excessive stocks. In the Lake trade, freighters carrying down iron ore and grain are making the upbound trip from Lake Erie ports without cargo, more often than with coal. The sluggish conditions in the Lake trade is the result of the delayed movement from the head of the lakes.

LOUISVILLE

Better movement but not much change in prices. Some increased demand from cotton mills.

A better movement of Kentucky coal is noted though this is not accompanied by much, if any, stiffening in prices. As has been the case for several weeks, however, there is said to be more coal moving at the higher price levels. The present movement is due to the retailers trying to get their supplies in before the large movement begins next month; at least the operators hope it will develop, though heretofore this year all signs have generally failed.

Inclement and abnormal weather has limited the farmers' stocking movement which was getting under way. The steam coals are somewhat quicker, the Southern cotton seed mills being in the market for a considerable volume. Prices are not much, if at all changed, the block coals for the most part ranging from \$1.25 to \$1.50, with the especially fancy coals from \$1.80 to \$1.90, and the bulk of the best nut and slack going at from 50 to 55 cents, all prices f.o.b. mines.

COKE

CONNELLSVILLE

Furnace coke still dull and inactive but with hopes of better prices later in the year. Foundry coke demand improved further. Production and shipments slightly increased.

The furnace coke market seems to be under less pressure from surplus coke, but prompt is still available at \$1.50 in limited tonnages at least. Shipments have increased on several contracts, in cases in which the furnace interests recently asked for a curtailment on account of the stacks working badly and not requiring their normal tonnages, but in several instances contract shipments are still below the normal. There is scarcely any inquiry for furnace coke for shipments over the remainder of the year. Some inquiry has developed

for the first six months of next year but so far as known the operators have refused to quote for that delivery. They still seem to expect that however unsatisfactory the market has been in recent weeks there will be a firming up before the end of the year.

Foundry coke demand has increased still more. There is heavier buying of prompt lots and shipments on regular contracts have been increased in many cases. Shenango Furnace No. 4 at Sharpsville has just gotten into blast, using coke produced at its own works in the Ligonier district. Claire and Fannie, in the Shenango Valley, are expected to blow in shortly. The market is quotable as follows: Prompt furnace, \$1.50@1.55; contract to Oct. 1, \$1.65@1.70; contract to Jan. 1, \$1.85@2; prompt foundry, \$2.25@2.60; contract foundry, \$2.30@2.60, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Aug. 14 at 374,413 tons, an increase of 7573 tons, and shipments at 378,865 tons, an increase of 9140 tons.

Buffalo—There is not much change in the situation. Some shippers are not very enthusiastic over the outlook; they say that the reports are hardly borne out by the actual improvement. While the trade is more active than it was in the spring the prices are not much higher. At present the quoted price is on the basis of \$4.25 for best Connellsville foundry and \$3.30 for stock coke.

Chicago—The metallurgical coke market seems to have hardened somewhat because of the steadily increasing demand. Byproduct sizes have gone forward in increasing volume. Quotations are as follows: Byproduct foundry, \$4.85@5.10; byproduct domestic, \$4.60@4.75; Connellsville, \$4.75@4.85; Wise County, \$4.75@4.85; gas coke, \$3.75@3.90.

MIDDLE WESTERN

GENERAL REVIEW

Market shows some strengthening in spots. Rate decisions cause a general hesitancy. Screenings steady. Some betterment in anthracite buying.

The situation shows no backward tendencies and has some encouraging aspects. There is more booking of small orders at fair prices, which in the aggregate amount to a considerable tonnage. Retail buying is gaining more momentum, and there is a broader market for steam coals. The buying is less spotty and the trend slowly upward.

Domestic sizes have moved in moderately increasing volume. The decline in screenings seems to have stopped, and they have hardened somewhat during the past week, selling on an average of 70c. to 75c. Business conditions in the Northwestern markets are improving; the crops of this section are showing substantially better than an average yield, and the depression in that territory seems to be about over. The demand from Northwestern interior points shows a steady increase, and there should be a stronger call for bituminous coal for threshing and domestic uses very shortly.

Lake trade is slow, and there seems to be no hope of improvement in the immediate future. Congestion on the docks of Upper Lake ports is still reported, and movement of dock coal to interior points is very slow. In the Middle West farmers do not seem to be buying coal as readily as in former years. This may be due to the excessive rainfall which has delayed their work and prevented them from hauling their usual supply of winter fuel. Some of the larger railroad systems are stocking up to guard against emergencies. Outside of Kentucky production, there is less cheap coal offered at the present time than ever before, and although the average running time of all mines is still only a little over three days per week, prices are well maintained.

CHICAGO

Price advances announced for Sept. 1 stimulate some month-end buying. Threshing demand has been disappointing. Eastern coals heavier. Anthracite moving better.

Franklin County domestic lump prices have ranged from \$1.35 to \$1.60 during the week, but it is said that most shipments have been going forward at around \$1.40, and very few at the circular of \$1.60. The demand is steady, and egg and nut have been moving a little better for the last few days. It is expected that an advance of 10c. a ton will be announced Sept. 1 on domestic sizes. Cartersville domestic lump is in steady demand at as high as \$1.60, and No. 1 washed has been strong at \$1.65. Williamson County prepared sizes are moving forward at around \$1.50, and the demand has bettered slightly.

Railroad shipments from the Springfield district have increased slightly during the past week. The decline in

screenings has ceased and the forwarding of domestic sizes has slightly improved.

Some improvement is apparent in the demand for Indiana coals. The retailers are beginning to buy domestic sizes for early fall trade. Domestic shipments for threshing trade are about over and the volume of this business was much less than in previous years. Steam coals seem to be picking up due to more activity in the iron and steel industries. Screenings have been in fairly good demand.

Knox County operators have been shipping more steam coal than anything else, and as a consequence mine-run and screenings have been stronger than domestic sizes; screenings have been selling as high as 85c. and 90c.

Sullivan County mines have been working close to three days this week. Clinton County mines are producing mainly steam coal, and the call for domestic sizes is very slow. Screenings are a little stronger.

An easing off has occurred in the demand for Pocahontas and New River prepared sizes. A record-breaking business was done in July both in prices and tonnage, but the Western territory did not respond to present efforts to stimulate shipments. Orders were large toward the end of the month in anticipation of the price advance on Sept. 1. Splint is improving. Nut and slack is in good demand, while mine-run is very weak. There seems to be little free nut and slack on the market. Some jobbers during the last week have forced lower quotations on spot business, but there is still firmness shown in the prices quoted by standard operators for free coal.

The Kentucky situation is slightly better, but there is still plenty of free coal sacrificed at low prices.

Anthracite as a whole has been moving in better volume. The country business has improved, dealers showing more of a disposition to take the coal they ordered earlier.

Quotations in the Chicago market are as follows:

	Williamson and Franklin Co.	Springfield	Sullivan	Clinton	Knox and Greene Cos.
Lump.....	\$1.40@1.60	\$1.25@1.50	\$1.35@1.50	\$1.25@1.35	\$1.40@1.50
Steam lump	.....	1.20@1.35	1.15@1.35	1.15@1.25	.....
2½ and 3-in. lump.....	.....	.....	1.25@1.35	.....	1.30@1.40
1½-in. lump.	.....	.....	1.20@1.25	1.15@1.25	.....
Egg.....	1.35@1.60	1.25@1.50	1.15@1.25	1.10@1.25	1.15@1.25
Nut.....	1.15@1.50	1.15@1.35	1.00@1.10	1.00@1.10	1.00@1.10
No. 1 washed	1.35@1.60	.....	1.50	.....	.....
No. 2 washed	1.35@1.45	.....	1.40	.....	.....
No. 1 nut.....	1.45@1.60	.....	.....	.....	.....
No. 2 nut.....	1.30@1.40	.....	.....	.....	.....
Mine-run.....	1.10	1.00@1.05	.85@1.00	.90@1.00	.85@1.05
Screenings..	.75@.80	.65@.75	.65@.75	.65@.80	.75@.85

	Harrisburg & Saline Co.	E. Kentucky	Pocah. & W. Va. Smok'l.	Penna. Smokeless	Hocking
Lump.....	\$1.35@1.50	\$1.35@1.90	\$2.10@2.25	\$2.00@2.25	\$1.40@1.60
1½-in. lump.	1.25@1.35	1.15@1.35	.....	.....	.....
Egg.....	1.35@1.50	1.15@1.35	2.00@2.25	1.70@2.25	1.35@1.50
Nut.....	.....	1.00@1.10	.....	1.65@1.75	.....
No. 1 nut.....	1.35@1.50	.....	.....	.....	.....
No. 2 nut.....	1.25@1.35	.....	.....	.....	.....
Mine-run.....	1.00@1.10	.85@1.10	1.25@1.40	1.25	1.00@1.10
Screenings..	.70@.75	.50@.75	.....	.....	.....

West Virginia splint, 1½ lump, \$1.25 3- to 4-in. lump, \$1.35.
Lake Receipts—Receipts by Lake for the week ended Aug. 24 and for the season, this year and last year, were as follows:

	1915		1914	
	Hard	Soft	Hard	Soft
Buffalo.....	19,797	.....	11,432	.....
Oswego.....	4,535	.....	6,795	.....
Toledo.....	.....	11,156	.....	10,904
Sandusky.....	.....	10,500	.....	.....
Cleveland.....	.....	6,548	.....	2,900
Ashtabula.....	.....	.....	7,000	9,264
	24,332	28,204	25,227	23,068
August total.....	71,612	113,460	115,803	79,167
Season total.....	451,011	340,700	417,515	415,475

INDIANAPOLIS

Seasonable improvement in the volume of trade, especially in domestic lump. Screenings in good demand at top prices of the season. Retailers pushing sales, anticipating foreign demand.

The Indiana coal situation shows the usual improvement over summer conditions, due to the approach of fall though the increase is not large. In past years it has been customary for retailers to make their first price advances in September and this usually stimulates buying of domestic grades in August. In other departments the improvement is caused by the opening of plants that pack tomatoes, corn, beans, etc.

The wet weather has prolonged the threshing season and so the demand for lump continues from that direction. Slack is still moving well at the recent better prices, 70 to 80c. for Nos. 5 and 6 and 85 and 90c. for No. 4. Some of the large operators are temporarily out of the market, having covered their output.

ST. LOUIS

Movement light and demand below normal for this period. Full winter circular in effect Sept. 1.

The market the past week has been listless and the movement light. There has not been the improvement in the demand that the middle of August usually brings. Prices are gradually advancing on lump and egg. By Sept. 1, when the full winter circular will be restored, the situation should begin to improve. However, dealers are said to be fairly stocked and not much change is expected until the consuming public begins to call for heavier deliveries.

Prices are as follows:

	Wilm. & Frnk. Co.	Sparta	Mt. Olive	Standard
6-in. lump.....	\$1.35@1.50	\$1.20	\$1.50	\$1.00
2-in. lump.....	.....	1.10	1.35	.90
3-in. lump.....	.....	.....	1.35	.....
3x6 egg.....	1.35@1.50	.....	.....	.90
No. 1 nut.....	1.25	.....	.....	.....
No. 2 nut.....	1.10@1.15	.....	.....	.75
No. 1 washed.....	1.65	.....	1.50	.....
No. 2 washed.....	1.35	.....	.....	.....
No. 3 washed.....	1.25	.....	.....	.....
No. 4 washed.....	1.20	.....	.....	.....
No. 5 washed.....	.80	.....	.....	.....
Screenings.....	.55	.55@.60	.....	.55

KANSAS CITY

There has been very little change in the prices in Kansas City in either the retail or the wholesale market during the past month. There has been a slight decrease of a few cents in some grades with the market running very slow. The companies believe that the prices are due to increase next week and are looking forward to the beginning of a better business then.

PRODUCTION AND TRANSPORTATION STATISTICS

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the P. R. R. Co.'s lines east of Pittsburgh and Erie for July of the current year and the seven months of 1914 and 1915, in short tons:

	July		Seven Months	
	1915	1914	1915	1914
Anthracite.....	653,020	693,545	6,076,487	6,347,822
Bituminous.....	3,668,146	3,966,357	23,929,923	27,521,539
Coke.....	1,091,344	847,135	6,090,263	6,075,020
Total.....	5,412,510	5,507,037	36,096,673	39,944,381

EXPORTS

The June coal exports by districts and states were as follows:

	Anthracite	Bituminous	Coke
Maine and New Hampshire.....	1,613	1	.....
Maryland.....	.....	305,917	8,010
Massachusetts.....	52	.....	.....
New York.....	20,685	4,201	644
Philadelphia.....	5,387	121,379	61
Porto Rico.....	.....	60	.....
Virginia.....	85	608,599	6,642
Mobile.....	20	290	.....
New Orleans.....	.....	769	.....
Arizona.....	.....	1,130	6,483
El Paso.....	.....	13,925	1,211
Laredo.....	.....	3,846	.....
San Francisco.....	.....	31	.....
Southern California.....	1	24	.....
Washington.....	.....	179	4,872
Buffalo.....	109,658	124,367	32,600
Dakota.....	795	2,082	154
Duluth and Superior.....	20	1,850	27
Michigan.....	.....	27,597	6,299
Ohio.....	10,058	630,970	398
Rochester.....	117,272	64,361	221
St. Lawrence.....	85,680	21,723	903
Vermont.....	1,310	109	103
Total.....	352,636	1,933,410	68,628

BUNKER COAL

Districts	June
Maryland.....	70,850
New York.....	318,389
Philadelphia.....	86,574
Virginia.....	159,155

BALTIMORE & OHIO

The following is a statement of coal and coke tonnage moved over this system and affiliated lines during July and the previous two months:

	May		June		July	
	1915	1914	1915	1914	1915	1914
Coal.....	2,564,481	2,357,119	2,883,959	2,380,795	2,887,918	2,504,407
Coke.....	297,897	301,163	329,130	298,237	344,557	255,650
Total....	2,836,287	2,658,282	3,213,089	2,679,023	3,232,475	2,860,057

MIDDLE WESTERN ROADS

The following is a comparative statement of the coal handled over the 17 principal Middle Western railroads for the first six months of this year, as compared with the same period last year:

	January		February		March	
	1914	1915	1914	1915	1914	1915
Ill. Cent. R.R.	783,936	816,349	782,302	592,875	868,612	651,454
C. & N. W. R.R.	766,318	740,667	775,064	499,986	914,980	530,388
C. B. & Q. R.R.	625,906	708,755	612,220	412,527	693,210	408,677
C.C. & St. L. Ry.	546,543	534,387	515,567	423,891	469,601	439,458
Vandalia R.R.	491,946	524,917	344,764	401,306	602,728	426,860
C. T. H. & S.E. Ry.	285,093	339,280	329,683	256,020	409,016	277,246
C. & A. Ry.	173,304	212,523	177,446	147,918	205,504	160,556
Wabash R.R.	156,844	179,512	171,154	138,198	191,277	148,585
St. L. & I.M. & S.Ry.	165,505	153,484	138,159	109,308	189,654	126,732
Southern Ry.	180,779	111,483	166,949	82,680	207,430	97,474
B. & O. S. W. R.R.	81,971	114,041	89,210	93,968	125,722	99,421
St. L. T. & E. R.R.	41,155	65,385	60,314	46,985	75,524	63,360
St. L. & O. F. Ry.	50,285	73,347	50,244	47,409	80,264	56,440
L. & M. Ry.	53,498	72,215	65,592	48,711	59,422	58,118
L. & L. Ry.	65,606	41,828	65,327	44,788	83,713	58,835
C. P. & St. L. Ry.	48,877	51,072	51,661	34,066	44,975	38,798
C. & N. W. Ry.	38,462	47,540	38,612	37,186	43,271	34,425

NORFOLK & WESTERN

Destination of shipments over this road for July of this year, the seven months of this year and last year were as follows, in short tons:

	July		Seven Months	
	1914	1915	1914	1915
Coal				
Tidewater, foreign.....	140,848	516,709	1,062,893	2,184,984
Tidewater, coastwise.....	279,708	281,739	2,241,934	1,887,920
Domestic.....	2,032,506	2,088,703	11,714,556	11,575,400
Coke				
Tidewater, foreign.....	182	552	197	16,688
Domestic.....	88,325	73,434	668,978	501,592

Total..... 2,591,569 2,961,137 15,688,558 16,166,584

Distribution of shipments for the month of June follows:

	Shipped	Tipple	Total	Coke
Poconantas.....	1,375,303	11,153	1,386,456	66,095
Tug River.....	348,737	2,370	351,107	
Thacker.....	209,216	6,713	215,929	
Kenova.....	81,794	8,643	90,437	
Total.....	2,015,050	28,879	2,043,929	66,095

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for June and the twelve months of the fiscal years 1914 and 1915, in short tons:

	June		Twelve Months	
	1915	%	1914	%
Tidewater.....	414,428	21	322,008	18
East.....	140,413	7	172,686	10
West.....	1,284,398	63	1,192,911	65
Total.....	1,839,239		1,687,605	
From Connections				
Tidewater.....			187	
Bituminous.....	185,400	9	135,357	7
Anthra. (local).....	229		980	
Anthracite.....	1,129		1,669	
Total.....	2,025,997	100	1,824,631	100
Coke.....	22,701		29,392	
Total.....			200,921	
			388,752	

I. C. C. DECISIONS

Investigation and suspension docket No. 344—Coal rates from Oak Hills, Colo.

This proceeding is supplementary to that reported in 30 I. C. C., 505. The carriers having published the joint rates therein fixed by the Commission failed to agree upon the divisions thereof. The initial line thereupon petitioned the Commission to make an order prescribing the just and reasonable divisions of such joint rates to be received by each carrier party thereto. Divisions prescribed.

Investigation and Suspension Docket No. 458—Anthracite coal rates to Chicago, Ill., and other points.

Following "Rates for Transportation of Anthracite Coal," 35 I. C. C., 220, the proposed increase of 25c. per gross ton on anthracite coal, "prepared sizes," from Pennsylvania mines to Chicago, Ill.; to points taking Chicago rates; to connecting points between eastern and western lines near Chicago, such as Joliet and Kankakee; and to the other connecting points, Peoria, East St. Louis, and St. Louis, justified.

Investigation and Suspension Docket No. 569—Bituminous coal and coke rates from mines and ovens in Alabama, Illinois, Kentucky, and Tennessee to Mississippi River crossings and various junction points in Tennessee, Mississippi, and Louisiana.

1. Proposed increased rates on coal to New Orleans, La., Memphis, Tenn., Greenville, Natchez, and Gulfport, Miss., Baton Rouge, La., and certain other points in Mississippi and Louisiana justified.

2. Proposed increased rates on coal to Jackson, Vicksburg,

April	May		June		Total 6 Months		
1914	1915	1914	1915	1914	1915	1914	1915
157,535	432,885	352,263	472,450	461,701	480,490	3,406,349	3,446,503
133,711	361,925	311,614	319,925	398,439	370,284	3,300,126	2,823,175
114,397	284,944	230,430	272,709	291,275	350,527	2,567,438	2,438,139
178,201	326,255	253,927	307,498	279,470	332,940	2,243,309	2,364,429
81,325	351,917	217,068	343,055	332,467	326,268	2,070,298	2,374,323
79,404	225,851	174,494	195,400	205,572	203,071	1,483,262	1,496,868
106,004	129,996	54,154	119,661	110,256	138,619	826,668	909,273
18,653	98,584	50,359	89,791	81,317	100,412	669,604	755,082
33,823	98,829	64,030	96,173	111,699	116,806	702,870	701,382
59,104	78,515	85,537	84,078	101,327	77,396	801,126	531,626
13,026	61,355	29,804	47,498	36,985	57,191	376,718	473,474
41,792	36,207	39,369	43,493	48,369	35,572	306,523	291,002
8,529	38,906	14,528	38,296	44,160	47,580	248,010	301,978
19,175	26,471	17,299	19,502	15,975	17,596	230,961	242,613
10,582	48,392	31,200	58,042	36,062	61,332	292,490	313,217
7,962	28,077	12,521	25,165	9,911	26,414	175,907	203,592
7,111	27,764	13,764	26,986	15,071	31,787	156,291	205,688

Newton, and certain other points in Mississippi and Tennessee not justified. Increased rates to Vicksburg from Illinois and Kentucky justified.

3. Certain increases as shown herein to Meridian and other Mississippi points, and to Jackson, Milan, and other points in Tennessee, justified.

4. Increased rates on coke to Mississippi Valley points justified.

FOREIGN MARKETS

GREAT BRITAIN

Aug. 13.—The coal industry is still hampered to a great extent by the Price of Coal (Limitation) Act and the licensing regulations. The latter, it will be remembered, apply to allied as well as neutral countries on and after today (August 13), and it will probably be some little time before the trade adjusts itself to the restrictions now imposed upon it. For the moment the amount of new business passing is not large, either in the inland or the shipping branches of the industry. The Board of Trade returns show that our exports of coal, coke and patent fuel last month were no more than 3,732,000 tons, as compared with 7,275,000 tons in July, 1913; but the total value has not fallen off proportionately, for the average value per ton last month was \$4.18, whereas in July last year it was only \$3.26. At the same time, our receipts from the export trade were only 22 millions sterling in the seven months now completed of this year, as compared with 31 millions in the corresponding period of 1913. The bunkering business has also fallen off during the same period from 12 million to 8,500,000 tons.—"The Iron & Coal Trades Review."

Exports—British exports for July and the first seven months of the past three years were as follows:

	July		Seven Months	
	1913	1914	1913	1914
To				
Russia.....	880,066	870,385	10,152	3,024,394
Sweden.....	402,713	423,349	131,382	2,501,362
Norway.....	180,898	172,368	243,107	1,358,801
Denmark.....	227,245	228,900	373,192	1,688,746
Germany.....	867,036	922,088		5,152,017
Netherlands.....	194,047	143,249	179,653	1,221,128
Belgium.....	162,492	127,892		1,234,054
France.....	1,161,473	1,090,169	1,533,713	7,580,543
Portugal.....	114,952	107,931	86,087	833,360
Spain.....	304,505	301,918	187,246	2,214,657
Italy.....	965,225	881,721	356,676	5,673,413
Aus. Hung.....	103,976	84,596		678,360
Greece.....	72,022	66,999	43,890	395,080
Roumania.....	25,987	47,061		96,131
Turkey.....	36,869	66,674		108,666
Algeria.....	97,581	101,719	53,010	768,982
Portuguese.....	18,937	2,456	23,552	158,068
Chile.....	44,626	32,426	343	409,398
Brazil.....	153,575	130,979	18,632	1,175,349
Uruguay.....	70,815	31,945	7,022	430,494
Argentina.....	360,119	285,422	68,344	2,167,420
Channel Is.....	20,729	19,101	11,505	91,320
Gibraltar.....	22,923	28,586	12,260	210,690
Malta.....	54,319	35,317	13,061	430,820
Egypt.....	290,891	262,224	118,177	1,804,202
Aden.....	14,229	11,156	16,515	87,064
India.....	1,379	5,591	5,915	106,948
Ceylon.....	14,032	27,141	6,740	141,720
Miscell'ous.....	111,550	90,118	38,843	758,205
Coke.....	99,605	107,954	66,935	599,275
Briquettes.....	200,814	210,418	125,880	1,223,046
Total.....	7,375,630	6,917,853	3,731,932	44,323,767
Bunker.....	1,883,676	1,919,433	1,098,877	11,970,713

¹ Includes Azores and Madeira. ² Including Anglo-Egyptian Sudan. ³ And dependencies. ⁴ And Canaries. ⁵ West Africa.

Note—The figures in the above table do not include Admiralty and certain other shipments.

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

For the official advertisements of bids wanted see the Contracts-to-Be-Let Section on Page 12.

†Indicates contracts regarding which official information has been received.

Recast

In the following table we give a list of all old contracts coming up for consideration during the ensuing week. The table gives our contract number, the name of the purchaser, city, tonnage and page on which the detail notice appeared.

No.	Purchaser	City	State	Tonnage	Page
1134	Board of Education	Butte	Mont.	3,000 ¹	198
1135	Louisville Provision Co.	Louisville	Ky.	2,400b	198
1160	Park View Hotel	Kansas City	Mo.	200a	199
1161	Board of Education	Colorado Springs	Colo.	3,000b	199
1168	Kan. City Vet. Col.	Kansas City	Mo.	100a	243
1169	F. G. Kinney & Co.	Kansas City	Kan.	500b	243
1170	Starks Realty Co.	Louisville	Ky.	1,100	243
1171	Municipal Light Dept.	Independence	Mo.	2 (cars) ²	243
1172	Aud. Wall Paper Mills	Chicago	Ill.	1 (car) ³	243
1173	Peet Bros. Soap Co.	Kansas City	Kan.		243
1174	Board of Education	Canton	Ohio	2,800b	243
1175	Amer. Radiator Co.	Kansas City	Mo.	12 (cars)	243
1177	Keeley Institute	Kansas City	Mo.	100b	243
1179	Kan. City Terminal Co.	Kansas City	Mo.	100b	243
1180	Water & Light Dept.	Columbia	Mo.	8,000b	244
1181	Prior Brass Mfg. Co.	Kansas City	Mo.		244
1182	Cupples Sta. L. H. & P. Co.	St. Louis	Mo.	25,000b	244
1203	Com. of Fisheries	Washington	D. C.	825a	244
1204	Com. of Adams County	Ritzville	Wash.		244
1205	Board of Education	Urichsville	Ohio		244
1209	Richland County Com.	Wahpeton	N. D.	300b	244
1262	Independent Sch. Dis.	Des Moines	Iowa		324
1268	Kidder County B. of Com.	Steele	N. D.	140b	324
1273	Starks Realty Co.	Louisville	Ky.	50	324
1279	County Government	Jamestown	N. D.	150b	324
				20a	324
1284	Free Public Library	Council Bluffs	Iowa		324
1298	Local School Board	Hannaford	N. D.	45b	324

a Indicates anthracite coal. b Indicates bituminous. ¹ Per year. ² Per month. ³ Per week.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

1090—Columbus, Ohio—Bids on this contract (p. 117), which provides for furnishing the Public Service Department with coal have been received as follows: SCIOTO RIVER pumping station, approximately 3500 tons. Elk Coal Co., Columbus, Hocking mine-run, \$1.44, Cambridge mine-run, \$1.46, West Virginia mine-run, \$1.42; New York Coal Co., Columbus, Hocking mine-run, \$1.60; Fletcher-William Co., Columbus, West Virginia mine-run, \$1.45; Gem Coal Co., Nelsonville, Hocking mine-run, \$1.53; Victoria Coal Co., Columbus, Hocking mine-run, \$1.48. MUNICIPAL LIGHT plant, 10,000 tons. Victoria Coal Co., Columbus, Hocking nut, pea and slack, \$1.19; Fletcher-Williams Co., West Virginia nut, pea and slack, \$1.12. GARBAGE REDUCTION plant, 3000 tons. Fletcher-Williams Co., Columbus, Hocking nut, pea and slack, \$1.19½, West Virginia nut, pea and slack, \$1.12; Victoria Coal Co., Columbus, Hocking nut, pea and slack, \$1.19. City hall, Schiller Park, water-works shop, State St. yard, Goodale Park and the Recreation department, approximately 1000 tons delivered. Franklin Builders' Supply Co., Columbus, various bids of \$2.29; \$2.05; \$2.60 and \$2.10 for Hocking lump; J. Rapp & Co., Columbus, Hocking lump, \$2.30 for all places; M. A. Suydam & Co., Columbus, \$2.17½ for all places, forked lump. This is the second opening of bids on this contract. All former proposals being rejected because of the reduction of 15c. on the freight rate from the Hocking Valley field which would affect the delivered price. There was some reduction in the bids as a result. The contract will be awarded within a short time. Address Clk. Paul B. Kemper, Public Service Comr., Columbus, Ohio.

1249—Ellwood City, Penn.—Bids will be received on this contract (p. 284), which provides for furnishing the fuel requirements of the local Board of Education until 8 p.m., Sept. 7. Address Secy. W. J. Moore, Bd. of Edu., Ellwood City, Penn.

†1174—Canton, Ohio—Bids on this contract (p. 243), which provides for furnishing the local Board of Education with coal during the ensuing year will be received until noon, Aug. 23. Bids are requested on Pittsburgh No. 8 three-quarter coal or its equal. All bids must be accompanied by a certified check for \$100. Address Clk. W. C. Lane, Bd. of Edu., High School Bldg., Canton, Ohio.

†1176—Topeka, Kan.—The tonnages involved in this contract (p. 243), which provides for furnishing the local Board of Education with coal during the ensuing year, are as follows: 200 tons of lump; 200 tons of slack; 2000 tons of nut coal. Bids will be received until 5 p.m., Aug. 31. Address Clk. M. C. Holman, Bd. of Edu., Topeka, Kan.

New Business

†1301—Pewee Valley, Ky.—The Confederate Home has advertised for bids for its winter supply of coal delivered at the home. Proposals on mine-run, lump and nut are required. Address Commandant Henry George, Pewee Valley, Ky.

†1302—Wilbur, Wash.—School District No. 59, at this place will receive sealed bids until Sept. 1, for furnishing 75 tons of steam coal to be delivered to the high school building. Address Clk. H. E. Jones, School Dist. 59, Wilbur, Wash.

†1303—Johnstown, Penn.—The Borough of Oakhurst will receive bids until 7:30 p.m., for furnishing a good quality of mine-run coal as may be required during the ensuing year. Address Secy. J. P. Orner, Oakhurst, Johnstown, Penn.

†1304—Jackson, Ohio—The Lick Township Board of Education will receive bids until noon, Aug. 28, for furnishing and delivering coal to the various school buildings during the ensuing year as may be required. Address Clk. R. K. Schellenger, Bd. of Edu. Lick Township, Jackson, Ohio.

†1305—Hubbard, Ohio—The Board of Education at this place will receive bids until noon, Sept. 3, for furnishing 14-in. screened coal delivered in the basement of the school building, as may be required during the ensuing year. Address Clk. Clyde Smith, Bd. of Edu., Hubbard Village School Dist., Hubbard, Ohio.

†1306—Billings, Mont.—Bids will be received by School District No. 2, until 4 p.m., Sept. 2, for furnishing the coal as may be required during the ensuing year. Bids may be submitted f.o.b. cars at Billings or delivered to the school buildings. Proposals are also requested for delivery alone. Address Clk. A. J. Thorine, School Dist. No. 2, Yellowstone County, Billings, Mont.

†1307—St. Louis, Mo.—Sealed bids were received until noon, Aug. 23, for furnishing the Water Department with approximately 37,000 tons of egg coal and 3400 tons of screenings to be delivered during the ensuing year. All bids were to be accompanied by a certified check for \$500 and the successful bidder will be required to furnish a bond for not less than \$5000, guaranteeing the satisfactory performance of the contract. The contract is to become effective Sept. 1, and will expire July 31 of next year. Address Supply Cdmr. Joseph B. Thomas, City Hall, St. Louis, Mo.

†1308—Shoals, Ind.—The commissioners of Martin County will receive bids until 10 p.m., Sept. 1, for furnishing coal as may be required at the County Court House and jail during the ensuing year. Address Audr. L. D. Haga, Bd. of Comm., Shoals, Ind.

†1309—Cedar Rapids, Iowa—Sealed proposals were received until 10 a.m., Aug. 27, for furnishing the local City Government with approximately 300 tons of bituminous lump and 5 tons of anthracite coal. Address City Clk. L. J. Storey, Cedar Rapids, Iowa.

†1310—Sidney, Ohio—Sealed proposals were received until Aug. 7, for furnishing the coal required at the local water works during the year beginning Sept. 1. Address Dir. C. B. Deweese, Sidney, Ohio.

†1311—**Cheney, Wash.**—The State Normal School at this place will soon advertise for coal to be supplied during the ensuing year. Address Superintendent, State Normal School, Cheney, Wash.

†1312—**Montevideo, Minn.**—The County Board of Chippewa County received bids until 2 p.m., Aug. 20, for furnishing and delivering coal as required during the coming year. Bids are requested on Youghiogheny coal. Address County Audr. J. J. Stennes, Montevideo, Minn.

†1313—**Boston, Mass.**—The Boston & Maine R.R. asks for bids on water transportation, on the coal delivered f.o.b. loading pier, and for coal delivered alongside Mystic Wharf, Boston, each for a period of one year from the dates of expiration of present charters and coal contract and for a period of five years from the dates. For previous purchase by this road see Contract 172, Vol. 7, p. 399. It is explained that the railroad now has a charter for a 7500-ton steamer carrying coal from Hampton Roads and Baltimore which expires Aug. 29, 1916, another charter expiring Oct. 31, 1917 and a contract for approximately 720,000 tons per year of locomotive bituminous coal which expires Apr. 1, 1917. Bids are asked at this time "in order to determine the most advantageous terms in contracts and charters to cover this business at the expiration of the present contracts. Bidders are asked to submit proposals on forms, in outline as follows: Schedule A: Steamer charter for one year and for five years starting Sept. 1, 1916. Schedule B: Steamer charter for one year and for five years starting Nov. 1, 1917. Schedule C: Contract for approximately 720,000 gross tons of bituminous, to be delivered on steamer at loading pier in one year commencing Apr. 1, 1917. Schedule D: Contract for approximately 720,000 gross tons of bituminous, to be delivered alongside Mystic Wharf, Boston, in one year commencing Apr. 1, 1917. Schedule E: Contract for approximately 3,600,000 gross tons of coal f.o.b. loading pier, to be delivered in five years. Schedule F: Contract for approximately 3,600,000 gross tons of coal alongside Mystic Wharf, to be delivered in five years. All bids must be in by Sept. 10. Address B. S. Hinckley, Boston & Maine R.R., Boston, Mass.

†1314—**Wellston, Ohio**—The Board of Education received bids until noon, Aug. 21, for furnishing and delivering No. 2 and No. 4 lump coal as may be required to the various school buildings during the ensuing year. Address Clk. C. L. King, Bd. of Edu., Wellston City, Ohio.

†1315—**Keytesville, Mo.**—The County Court will receive bids until Aug. 30 for furnishing the local Court House and jail with Illinois coal, to be delivered before Nov. 1. Address County Clk. W. W. White, Keytesville, Mo.

†1316—**Minot, N. D.**—Sealed bids were received by the School Board of Dist. No. 128 for furnishing coal for the Consolidated Schools during the ensuing year. Bids were received until Aug. 21. Address Clk. Thomas R. Drady, Burt School Dist., Minot, N. D.

†1317—**Hutchinson, Minn.**—The Board of Education for Dist. No. 2 received bids until 8 p.m., Aug. 23, for furnishing 250 tons of Youghiogheny lump coal delivered at the local schools. All bidders were required to designate the heat value of the coal they propose furnishing. Address Secy. Henry Braun, Bd. of Edu., Dist. No. 2, Hutchinson, Minn.

†1318—**Carthage, Mo.**—Bids will be received by Jasper County until Sept. 1 for furnishing the best quality deep shurt, lump, mine-run, nut and slack coal, as may be required at the Court House, County Jail and County Almshouse, during the ensuing year. Bids should indicate prices on the different grades of coal both on track at the railroad and delivered in bins at the places noted. Address County Clerk, Jasper County Court House, Carthage, Mo.

†1319—**Boise, Idaho**—Sealed bids will be received until 2 p.m. Sept. 1, for furnishing the Idaho Soldiers' Home and the State Penitentiary with their annual fuel requirements during the ensuing year. The coal for the Soldiers' Home is to be Aberdeen, Castlegate or an equally high grade product; for the penitentiary 24 carloads of slack coal and four tons of nut will be required. Address Secy. Geo. R. Barker, Capitol Bldg., Boise, Idaho.

†1320—**Hamilton, Ohio**—Sealed bids will be received until 10 a.m., Sept. 1, for furnishing the County Government with 600 tons of 3-in. West Virginia screened lump, 300 tons to be delivered f.o.b. cars at Hamilton during the month of September, and the balance to be delivered in the basement of the Court House during the same period. Address County Audr. W. W. Crawford, Hamilton, Ohio.

†1321—**Plymouth, Ind.**—The Board of County Commissioners will receive bids until Sept. 7, for furnishing 280 tons of Pocahontas egg coal. Address County Audr. G. F. McCoy, Plymouth, Ind.

†1322—**Brownstown, Ind.**—The Board of County Commissioners will receive bids until Sept. 7 for furnishing coal as may be required during the ensuing year. Address County Audr. Albert Luedtke, Brownstown, Ind.

†1323—**New York, N. Y.**—The army engineers at this place will receive bids until noon, Sept. 24, for furnishing and trimming into the United States dredges in New York Harbor from 9000 to 25,000 tons of bituminous coal. The contract is to run over the period ending Sept. 30 of next year. For the list of bids on this business last year see contract No. 16, Vol. 6, p. 854. Address United States Engineer Office, Room 707, Army Bldg., 39 Whitehall St., New York City.

†1324—**Port Engles, Wash.**—The School District No. 7 will receive bids until Sept. 1, for furnishing 100 tons of coal to be delivered to the new central building. Address Clk. Madge H. Nailor, Dist. No. 7, New Engles, Wash.

†1325—**Canton, Ohio**—The Stark County Board of Commissioners will receive bids until 10 a.m., Aug. 30, for furnishing approximately 1500 tons of lump mine-run and slack coal. Quotations should be made f.o.b. Canton, Ohio. Address Board of Commissioners, Stark County, Canton, Ohio.

†1326—**Dalton, Ohio**—Sealed bids will be received until 6 p.m., Aug. 28, for furnishing and delivering coal to the sub-districts of Sugarcreek township during the period ending Jan. 1, 1916. About 70 tons will be required altogether. Address Clk. Clayton L. Arnold, Bd. of County Comrs., Dalton, Ohio.

†1327—**Panama, C. Z.**—The Panama R.R. Co. will receive bids until noon, Sept. 3, for furnishing their coal requirements during the twelve months ending Sept. 15, 1916. The estimated tonnage involved is between 500,000 and 600,000, although no quantity is actually guaranteed. For data in regard to previous letting of this contract, see "Coal Age," Vol. 6, pp. 814, 854. On the current contract it is provided that the best quality, steaming, semibituminous mine-run coal only is desired. When coal is delivered on cars alongside of steamer, 65% of it must pass over a ¾-in. square opening and at least 30% must pass over a 3-in. bar screen. It must not contain over 3% moisture in the delivered coal, 6½% ash in the dry coal, 21% volatile matter or 1% sulphur, and must contain at least 72½% fixed carbon, and have a B.t.u. value of 14,700 on dry coal. All bids must be accompanied by a certified check for \$1000 and the successful bidder will be required to submit a bond in the sum of not more than \$30,000. Bids on a portion of the tonnage only will be received and considered. There is a provision in the specifications by which bonuses will be given for coal exceeding the requirements as to analysis and also whereby the railroad may at its own discretion accept inferior quality by making a proportionate reduction. Address Asst. Pur. Officer, R. E. Rutherford, Panama Railroad Co., 24 State St., New York City.

†1328—**Jacksonville, Fla.**—The County Commissioners will receive bids until 2 p.m., Sept. 4, for furnishing 3-in. screened lump coal as may be required during the ensuing year. The successful bidder will be required to give a bond guaranteeing the faithful performance of the contract. Address County Clk. C. A. Boruff, Jacksonville, Fla.

†1329—**Plainview, Neb.**—The School Board of Dist. No. 5 will receive bids until Sept. 1, for furnishing lump and nut coal as may be required during the ensuing year. Address Secy. F. C. Holbert, School Bd. Dist. No. 5, Plainview, Neb.

†1330—**Sentinel Butte, N. D.**—The Board of Directors of the Sentinel Butte School Dist. No. 2, will receive bids until noon, Sept. 1, for furnishing and delivering 100 tons or more of lignite coal to the local school as may be required during the ensuing year. Address Clk. John Gilbertson, Sentinel Butte School Dist. No. 2, Sentinel Butte, N. D.

†1331—**Fairpoint, Ohio**—The Board of Education of Wheeling Township will receive bids until noon, Sept. 3, for furnishing coal as may be required to the various schools, deliveries to be completed before Oct. 15 of the current year. Address Clk. Addison Saffell, Bd. of Edu., Fairpoint, Ohio.

Contracts Awarded

Note—Successful bidders are noted in **bold face type**.

†No. 787—**Springfield, Ohio**—This contract (Vol. 7, p. 1005), which provides for furnishing the Hospital Board with coal, has been awarded the **Beckley & Myers Co.**, at \$2.60 per ton for West Virginia bituminous mine-run. About 25 carloads will be required. Other bids on this contract were: Springfield Coal & Ice Co., \$2.45; Grube Coal Co., \$2.45 and \$2.60, the latter bid being on Red Jacket coal. Address Clk. William H. Mahoney, Board of Hospitals, Room 2, City Bldg., Springfield, Ohio.

No. 856—Kansas City, Mo.—Additional information regarding the awards on this contract (Vol. 7, p. 1085, Vol. 8, pp. 40, 158) has been received as follows: **J. T. Wellington** will furnish 3900 tons of Cherokee lump bituminous at \$3.54 per ton and the **Sweeney Coal Co.**, 2900 tons of semianthracite at \$5.20 per ton. On last year's business the bituminous cost \$3.54 and the semianthracite \$5.34. Address Pur. Agt. F. S. Casey, Bd. of Edu., Kansas City, Mo.

No. 885—Detroit, Mich.—This contract (Vol. 7, p. 1086), which provides for furnishing the Lighthouse Department with coal during the fiscal year ending June 30, 1916, has been awarded on the following basis: **DETROIT DEPOT** including light stations in lower end of Eleventh U. S. Lighthouse District was awarded to **J. & T. Hurley**, Detroit, who bid \$3.50 on three-quarter lump trimmed in bunkers or forked and bagged and \$8 on anthracite, the total estimated amount aggregating \$15,000; the **United Fuel & Supply Co.** bid \$3.48 in bunkers, forked and bagged at \$3.64, anthracite stove \$7.69 and chestnut \$7.94. The contract for the **DULUTH DEPOT** was awarded to the **Northwestern Fuel Co.** at \$3.97 for three-quarter lump trimmed in bunkers, \$4.53 forked in bags, \$8.79 for anthracite chestnut and \$8.51 for egg and stove; the **Pittsburgh Coal Co.**, bid \$3.97 for three-quarter lump trimmed in bunkers, \$4.53 forked in bags, \$9.07 for anthracite chestnut and \$8.79 for egg and stove. The contract for the **SAULT STE. MARIE** district was awarded to **George Kemp**, at \$3.30 for three-quarter lump trimmed in bunkers, \$3.60 forked in bags and \$7.40 for anthracite in bags, all delivered at the Lighthouse depot, Sault Ste. Marie; the **Perry Coal Co.** bid on this same business \$3.35 for three-quarter lump trimmed in bunkers, \$3.70 forked in bags and \$7.90 for anthracite in bags. The **C. Reiss Coal Co.** was awarded the contract for the **ASHLAND, WIS., DEPOT** at \$4 for three-quarter lump trimmed in bunkers, \$4.40 forked in bags and \$8.80 for anthracite egg and stove size. Address Inspector Edward L. Woodruff, Eleventh Lighthouse District, Detroit, Mich.

†No. 892—Jacksonville, Fla.—This contract (Vol. 7, p. 1086, Vol. 8, p. 76), which provides for furnishing the U. S. Engineers' Office at this place with 5500 tons of coal, was awarded to the **Logan Coal & Supply Co.**, and the **Tampa Coal Co.** The former bid, \$4.42 per ton for 4000 tons and the latter \$5.75 for 1500 tons. Address, District Engineers' Office, P. O. Drawer 45, Jacksonville, Fla.

No. 984—Kansas City, Mo.—This contract (p. 41), which provides for furnishing Smith & Sons Manufacturing Co. at this place with coal during the ensuing year, has been awarded to the **Gray-Bryan Sweeney Coal Co.** While the price at which the business was done is not available, it is understood to have been less than last year. Address S. F. Smith, Lydia & Guinotte Aves., Kansas City, Mo.

†1034—Youngstown, Ohio—This contract (pp. 115, 243), which provides for furnishing the Local Board of Education with approximately 5000 tons of coal, has been awarded to the **Crystal Ice Co.**, at \$2.70 per ton for 1½-in. lump, \$2.50 per ton for nut and \$1.75 per ton for slack. Address Dir. W. N. Ashbaugh, Bd. of Edu., School Dist. No. 20, W. Wood St., Youngstown, Ohio.

†1058—Plymouth, Mass.—This contract (pp. 116, 283), which provides for furnishing the county commissioners with 400 tons of egg and 100 tons of a high-grade bituminous coal has been awarded to the **E. P. Reed Lumber Co.**, of North Abington, who bid \$6.40@6.60 on Lehigh egg coal and \$4.95 on Pocahontas. Address, County Com. Lyman P. Thomas, Plymouth, Mass.

†1065—Kansas City, Kan.—This contract (p. 116), which provides for furnishing the Board of Education with 90,000 bu. of Cherokee lump, and 1000 bu. of slack coal have been awarded to the **Buchan Coal Co.**, of this city, at \$3.25 for lump, and \$3 for slack coal. The prices are slightly under the figures of last year. Address Pur. Agt. L. Friedman, Bd. of Edu., Kansas City, Kan.

†1068—New York, N. Y.—This contract (pp. 117, 243, 283, 323), which provides for furnishing the Department of Docks and Ferries with approximately 1500 tons of egg coal, has been awarded to **Pattison C. Bowns**, at \$5.33 per ton. Address Dock Com. R. A. C. Smith, Pier A, North River, New York.

1088—New York, N. Y.—Additional details regarding the award of this contract (pp. 117, 198, 325), which provides for furnishing the Department of Bridges with 250 gross tons of No. 1 buckwheat and 250 gross tons of mine-run bituminous, have been received as follows: As previously noted the contract was awarded to **Burns Brothers**, and was dated July 30, the consideration being \$3.25 on the buckwheat and \$3.30 per ton on the bituminous. Address Comr. F. J. H. Hracke, Municipal Bldg., New York City.

Contract Notes

Pennsylvania R.R.—Press reports are to the effect that the Pennsylvania R.R. is stocking coal heavily.

Chippewa Falls, Wis.—The contract to furnish the city with its winter's supply of coal was awarded to the **Clark Grain & Fuel Co.**

Valparaiso, Ind.—The Board of County Commissioners let the contract for 200 tons of Pocahontas coal to **M. Consh**, of this city, at \$4.95 a ton.

Goshen, Ind.—The bids received by the Board of County Commissioners for coal for county uses next year were not satisfactory and new bids will probably be asked at the September meeting of the Board.

Cambridge, Ohio—The Board of Control has awarded the contract for furnishing coal for the city power and light house to the **Puritan Coal Co.** at \$1.19½c. for run-of-mine and \$1.29½ for three-quarter-inch coal. The **National Coal Co.** bid \$1.20 for mine-run and \$1.30 for three-quarter inch.

Bear Creek, Mont.—The Interstate Commerce Commission, acting on a complaint filed by the **Bear Creek Coal Co.**, has ordered the railroad rate on screenings from **Bear Creek, Mont.**, to **Metaline Falls, Wash.**, reduced from \$4.25 to \$3.75 per ton. The screenings are used at **Metaline Falls** in the manufacture of cement.

Baltimore & Ohio R.R.—The **Baltimore & Ohio R.R.** has awarded its annual coal contracts. About twenty-five firms, whose names were withheld by the road, but with mines located along its lines, received awards which totaled 6,000,000 tons for delivery over the next twelve months. The Consolidation, **New England Coal & Coke** and **Quemahoning Coal** concerns are understood to have figured largely in the awards.

Hazleton, Penn.—It has been noticed that all of the large anthracite companies who have storage yards are filling them to their capacity at this time, with a possibility of a suspension in view. For some weeks past the **Lehigh Valley R.R.** has been placing large quantities of engine fuel in their storage plant at **Hudsondale**, and all of the other railroads seem to be taking the same precaution.

Oklahoma City, Okla.—Contract to furnish coal for **Oklahoma City** schools has been awarded the **M. B. Schofield Co.** of **Oklahoma City**, which agreed to furnish 700 tons of semianthracite at \$3.35 per ton, for the high school and 2000 tons or more of **Dewar** coal at \$3.75 per ton for the ward schools. Enforcement of this contract by the Board of Education has been enjoined on the application of **Dr. L. Haynes Buxton**, alleging a lower bid was submitted by **Mgr. C. C. Buxton** of the **Garrison Coal Co.**, **Oklahoma City**.

Columbus, Ohio—No legal action has yet been taken in an attempt to abrogate the contract (p. 286), entered into by the trustees of the **Ohio State University** with the **Lorain Coal & Dock Co.** to supply the university with 15,000 tons of coal from the **Logan County, W. Va.**, mine. The news of the award of the contract has raised a storm of protest because of the campaign which has been started to "use Ohio-mined coal." It may be that some steps will be taken to abrogate the contract but the method to be followed has not been outlined as yet.

St. Marys, Ohio—The contract for furnishing the electric light plant with coal during the ensuing year has been awarded to the **Avon Coal Co.** at 72½c. per ton for mine-run coal. The following is a complete list of bids submitted:

COAL BIDS RECEIVED JULY 21, 1915

Bidder	Nut and Slack	Mine-run
The Chesapeake & Ohio Coal Co.	.....	\$0.75
West Virginia Pocahontas Coal Sales Co.	\$0.70	87
The Carbon Fuel Co.	75	85
The Reliance Coal & Coke Co.	64½	87
The Colonial Coal & Supply Co.	.....	80
The Black Diamond Coal Co.	.....	97½
Kentucky Fuel Co. (no bond)	75½	90
Victoria Coal Co. (no bond)	45½	90½
The Lorain Coal & Dock Co.	60	80
The Seidenfeld-Hammond Coal Co.	.....	95
Hatton, Brown & Co.	75	74
Smokeless Fuel Co.	54	.....
Ohio & Michigan Coal Co.	75½	.....
Hocking Valley Products Co.	.....	1.05
Edmund A. Coal Co.	60	84
Bewley-Darst Co.	.....	75
Avon Coal Co.	65	72½
Kittanning Coal Co.	.....	81
S. J. Patterson Coal Co.	.....	85½
Castner, Curran & Bullitt, Inc.	70	77½

¹ Also 82c. ² Also 85c. ³ Also 50c. ⁴ Also 92½c. ⁵ Also 75c. ⁶ Also 95c.